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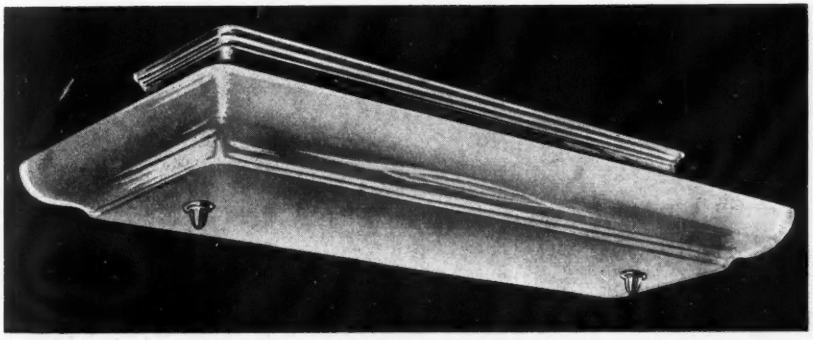

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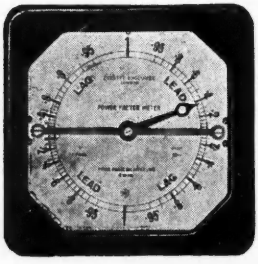

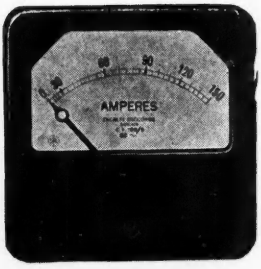

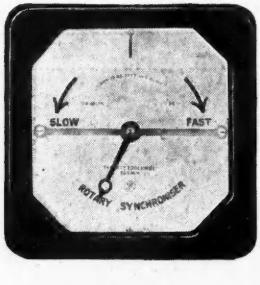

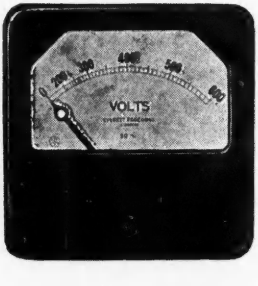

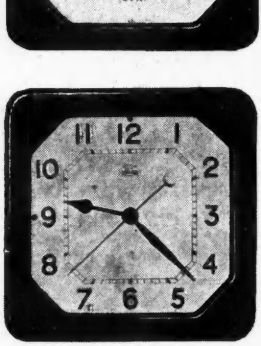

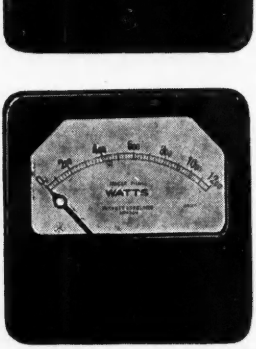

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Nationalized Electricity

ACHIEVEMENTS IN THE FIRST YEAR

IN some respects the nationalization of the electricity supply industry was a simpler task than the taking over of coal and railways. The coal-mining industry consisted mainly of hundreds of scattered unco-ordinated units showing great variety. The electricity supply industry, although also in the hands of many different authorities (about 600), was rather more "standardized"; many of the 600 (on the company side) were integrated, the electricity supply associations provided useful liaison, and the grid system also bound them together.

The railways, of course, were already grouped and thus more easily assimilated but they were saddled with much dead weight in shape of heavy arrears of work, obsolescent premises and equipment, and increasing losses.

As regards "labour relations" electricity supply had a much better record than the other two industries.

No Upheaval

But when all this is given due weight the work done up to to-day, the first anniversary of Vesting Day, has been remarkable. It started with the appointment of the "Organizing Committee" in May, 1947, under the chairmanship of Lord Citrine. The Committee prepared the ground so well that the upheaval anticipated by some people failed to occur. Transition from the old to the new ownership went off remarkably smoothly; the public was hardly aware of the change and most of those in the industry just carried on with their jobs.

Those who have kept in close touch with the industry's affairs know that the main credit for this must go to Lord Citrine, who has shown that he possesses a truly remarkable grasp of the smallest details and a human approach which has smoothed out a thousand difficulties and reassured those who felt qualms and uncertainty at the change-over. Behind him he has had his fellow members of the Organizing Committee and, later, of the Central Authority and Area Boards and their senior officers, a team which has performed a prodigious task with great ability and tact.

Present Handicaps

It is a pity that their good work has been overshadowed in the public mind by the price increases which the new authorities have been forced to introduce. It was left to them to rectify a position which the industry had got into by a mistaken price-stabilization policy and on top of this they were compelled by the Ministry of Fuel and Power to add the "Clow" surcharge. Another grave handicap has been the lack of plant, also inherited by the Authority, which has led to a struggle for due consideration amid a shortage of men and materials.

All of this has naturally been put down by the public to nationalization and the B.E.A. and Boards now have the task (in continuing difficulties) to live this down and regain public confidence. They also have to maintain the confidence of other branches of the industry which can suffer much harm if the new authorities interpret their mission too widely and put competition above co-operation.

In this issue, at our request, Lord Citrine briefly surveys the accomplishments of the new "owners" and although, as he says, space considerations restrict the story, enough is said to afford an indication of past endeavour and future aspirations. We feel sure that our readers will wish the B.E.A. and Boards success, for the supply section is the foundation of the electrical industry and it must be sound and healthy.

WHOLESALERS AND MIDDLEMEN

It is the electrical wholesalers' claim that they provide a service which could not be performed so effectively or economically by any other means. They carry stocks of the products of many manufacturers from which their customers may choose, they can fill composite orders, and they have a good idea of the financial standing of their customers. They contend that it does not pay manufacturers to attempt to distribute their products to the ultimate users. If and when the Government inquires into the distribution question the genuine electrical wholesalers should have a good case. The same cannot be said of some others properly described as "middlemen" who merely take an order and pass it to a manufacturer for direct delivery and draw a commission for this "service."

WASHING MACHINE PROGRESS

While it is comparatively easy to sell capital plant abroad it is not so simple to dispose of domestic electrical appliances. Yet this is the kind of equipment which it pays us to export. Vacuum cleaner manufacturers have done well in recent years although recently there have been signs of some falling-off in this trade. Washing machines have just been given prominence by the Board of Trade. This is a business which has entirely reversed its direction since 1938. Then most of the electrical washing machines came from North America, although our manufacturers did manage to export machines to the value of £10,500. Last year they made a magnificent drive and raised the value of their exports from £383,184 in 1947 to £1,132,240—107 times the 1938 figure. The Board of Trade says the industry has "incorporated new ideas and devices and has shown initiative in sending representatives abroad to discover the particular requirements of other countries."

BULK TARIFF

One more step has been taken towards the intended standardization of price to be paid for energy purchased in bulk from the British Electricity Authority by the fourteen Area Boards. As from to-day, 1st April, as explained on another page, the plus and minus adjustments which have operated during 1948-49 will be halved. They will cease altogether after 31st March, 1950, when a uniform tariff for supplies taken in bulk is expected to apply, subject to the appropriate standard coal clause variation.

POWER AND ARCHITECTURE

It is clear from the suggestions made to architects by the Royal Fine Art Commission that the design of a power station group is not a simple matter. Even when the station building itself has been given an acceptable form there remain the cooling towers, coal-handling plant, coal dumps, etc., and the Commission says that "efforts should be made to avoid these servicing requirements forming excrescences in an otherwise carefully designed group of buildings." Another thing to be avoided is what the Commission calls "the temptation to give the larger elements of a power station a heavy monumental character."

MUNICIPAL CONSUMERS

The conversion of the former Committee of Smaller Municipal Electricity Undertakings, into the "National Municipal Electricity Council," might have been accompanied by the shortening of the title, but in its new form it may serve a useful purpose. It aims at speaking for local authorities as large consumers of electricity, and seeks to secure co-ordinated action between those authorities and electricity suppliers in such matters as housing schemes and street lighting. It does not now intend to duplicate the work of the Consultative Committees, but suggests the delegation of this work to district bodies consisting largely of former members of electricity committees.

Nationalization: *The First Year*

By the Rt. Hon.
LORD CITRINE,
P.C., K.B.E.

To-day the British Electricity Authority celebrates the first anniversary of its official inauguration although there had been a great deal of preliminary work. Lord Citrine, chairman of British Electricity, has kindly acceded to our request to make a brief survey of the achievements and intentions of the Authority and Electricity Boards

ONLY a brief survey of the major developments that have taken place in the last twelve months is possible. Full particulars must await the annual report of the British Electricity Authority and the Area Electricity Boards, which must be presented to the Minister of Fuel and Power, and Parliament.

Smooth Transfer

The most remarkable thing about the merging, on 1st April, 1948, of some 541 separate company and local authority electricity undertakings into the new national organization of one Central Authority and fourteen Area Electricity Boards was the smoothness with which it was effected. As far as the consumers were concerned, there was no evidence whatever of the momentous change that had taken place. The great new enterprise, British Electricity, the largest electricity supply undertaking in the world, was born without fuss or distress.

For this first achievement much credit is due to the original Organizing Committee, and to the preliminary planning by the Central Authority. By Vesting Day we had appointed in every supply undertaking senior executive officers with full authority to carry on day-to-day operations on behalf of the new owners. Thanks largely to the efficient and willing manner in which they carried out their duties, there was no hiatus in executive responsibility.

No less important to smooth transfer was the loyalty of the employees of all grades, who carried on under the new regime as effectively and conscientiously as formerly. The generous co-operation of the local authorities from whom undertakings had been transferred was of inestimable value. It would be unreasonable to expect perfection in anything, but the ready assistance which the Electricity Boards have been afforded during the past twelve months has enabled us to resolve the many detailed problems associated with the transfer.

The Human Factor

With nationalization, some 95,000 manual workers, 13,000 technical, and 25,000 clerical and administrative staffs, about 133,000 all told, became colleagues in British Electricity. Although the supply industry was well served by negotiating machinery in the past, the differences in wage rates and conditions of service inherited from individual undertakings were many and widespread.

While a lot yet remains to be done in removing anomalies and solving detailed problems, there is solid achievement in the fact that negotiating machinery now exists at national, district and local levels for settling by agreement, or arbitration in the last resort, every difficulty in regard to wages, salaries and conditions of service for virtually everyone in the supply industry.

The National Joint Industrial Council covering the manual workers, the National Joint Board for the technical employees, and the National Joint Council catering for the clerical and adminis-

trative staff, have been in operation for several months. An agreement covering the senior managerial and executive officials has been negotiated and completed, subject to consultation on final details. When that has been done there will be not more than 150 persons throughout the whole organization whose salaries and conditions of service will not be settled by collective negotiation.

The second outstanding development in relation to those employed in British Electricity is the establishment of machinery whereby everyone in the industry, through their elected representatives, can voice their views, not only on all matters affecting them personally—such as safety, health and welfare, education and training—but on the efficient operation of the services provided by the industry. I refer to the recently created National Joint Advisory Council, and the District Councils and Local Advisory Committees that are in process of being organized.

There is nothing quite so complete in any industry as this machinery for consultation, and it is my confident hope that the time and care which has been bestowed upon its establishment will be of immense benefit to everyone.

Safety Code

Under the headings of safety, health and welfare, education and training, an excellent start has been made. A practical and thorough code of safety regulations has been devised, and will shortly be discussed with the trade unions. Provisional arrangements had to be applied, as it was found, rather surprisingly, that there were many undesirable variations in safety practice in different undertakings. In a few, no real code seems to have existed.

In respect of health and welfare, much information has been collected as a consequence of a systematic survey of the industry, and the nucleus of the organization at headquarters and in the Areas and Divisions has been established.

The Authority's first summer school, held at Oxford last August, was so successful that it was decided to operate two schools in 1949, at Cambridge and Oxford respectively. The former Haddon Hall Hydro at Buxton, now "Electricity Hall," has been acquired and inaugurated as a staff conference and training centre. Already conferences of the superintendents of power stations of 20 MW and over have been completed, and a start has been made with courses for the chairmen and secretaries of works committees. Horsley Towers, at Leatherhead, will also be used for such purposes.

The largest of the standing committees of the new National Joint Advisory Council is that provided for education and training. It will be assisted by persons co-opted for their special knowledge of these subjects, including representatives of the Ministry of Education, the Ministry of Fuel and Power and the Ministry of Labour.

The trade unions have co-operated fully in these developments, and their goodwill has been of immense help and encouragement to all who desire to see education and training carried to the highest standards compatible with the other needs of the industry.

Financial Adjustments

I indicated in a broadcast message on Vesting Day that the financial stability of the industry required early attention. This may read strangely to those nurtured in the faith that electricity supply was a prosperous and flourishing industry. This is substantially true, and the fact that we were faced with prospective losses of several million pounds in some 150 undertakings was due principally to the policy of the Government during the war to keep the cost of electricity low, even in face of steeply rising coal and other costs, and at the expense of depletion of financial reserves.

Owing to the operation of the coal cost variation clause in industrial tariffs, there had developed a marked disparity between such tariffs and those under which domestic consumers were being supplied. To some extent domestic users were being subsidized by industrial consumers.

The steps taken to establish a proper financial basis took the form first of increases in the 150 undertakings showing actual or prospective losses and, second, a general increase of domestic tariff unit charges to the economic minimum of 0.75d per unit. These adjustments were estimated to safeguard the industry against loss in a full year of working, but many of them did not become operative until the financial year was well ad-

vanced. Coincident with this, flat rate tariffs in excess of 6d were reduced in practically all cases to a maximum of approximately 6d per unit.

The tariff for supplying electricity in bulk to the Area Electricity Boards was determined by fixing an economic national tariff with regional coal cost variations. Surcharges or rebates to individual Boards were instituted to ensure that in the first year of operation they would obtain their electricity at the same overall cost as before nationalization. This is an interim arrangement, but surcharges and rebates will be halved for the second year of operation, and they will disappear entirely from April, 1950, onwards. A common bulk tariff, with regional coal adjustments, will then apply to all the Area Boards.

As regards the simplification and standardization of the retail tariff system generally, the complex questions of both domestic and industrial tariffs are being examined very thoroughly by special committees, and it would be premature to speculate on the nature of their recommendations.

Plant Progress

The major problem of electricity supply has been that of overcoming the plant shortage resulting from the war. Careful examination revealed that the earlier estimates of plant which could be commissioned in 1948 and 1949 were over-optimistic. Instead of attaining the target of 1,000 MW in 1948, the actual new capacity installed was 566 MW. Although disappointing, this represents the second highest total of new plant ever installed in one year in Great Britain. The target for the year 1949 has been fixed at 996 MW, but already there are signs that it will take extraordinary efforts to achieve it. Many examinations of the plant position with the various associations of manufacturers have taken place during recent months, and the most careful investigation has been made into individual causes of delay. There is little doubt that, without a marked increase in capacity in the production of boilers, tubes and pipework, these important sections will be hard put to it to deliver the plant estimated. The progressing of the civil engineering work will be taken over by the British Electricity Authority as from the 1st April, 1949, and it is anticipated that progressing through the manufacturers' works will come under the direct control of the Authority in June of the present year.

Considerations of space prevent a more extended review, but the foundations have been firmly laid during the past twelve months of what, I hope, will prove an efficient and durable organization, flexible and responsive to consumer needs and permeated with a spirit of public service. I am eternally grateful for the help, co-operation and encouragement which I have received personally throughout this difficult period. The *Electrical Review* and the technical press generally have done much to facilitate this.

B.E.A. Easter School

FROM to-morrow (2nd April) until the 9th the British Electricity Authority and Electricity Boards are running a "school" at King's College, Cambridge, at which ninety members of the authorities' staffs will attend.

The school will be opened with a short address by Lord Citrine, chairman of the B.E.A.; Lord Citrine will also speak on "A Year's Progress" on the Sunday morning. The general programme for each of the following five days will be a morning lecture and group discussion, followed by a general discussion, and in the evening a lecture and discussion, or films.

The lectures will include "Engineering Development," by Mr. V. A. Pask, chief engineer of the Authority; "Progress in the Area Boards," by Mr. C. T. Melling, chairman, Eastern Board; "Administration and Finance," by Sir Henry Self, deputy chairman (administration) of the Authority; "Development of Distribution," by Mr. D. H. Kendon, deputy chairman, Midlands Board; "A Year's Functioning of the Negotiating Machinery," by Mr. A. H. Banks, chief labour relations officer of the Authority; "Atomic Energy and Electricity Supply," by Dr. T. E. Allibone, director of the A.E.I. Research Laboratories; "Educational Progress," by Mr. J. W. Thomas, chief education and training officer of the Authority; "My Work," by three students; and "The Operation of the Grid," by Mr. J. N. Waite, divisional controller, London Division.

It has also been arranged for the students to visit Cambridge University Engineering Laboratories, and Little Barford power station. They will also be taken on a conducted tour of Cambridge colleges.

Views on the News

By REFLECTOR

GAS and electricity, though generally keen rivals, sometimes find themselves companions in adversity. This has been the case with the purchase tax on water- and space-heating apparatus and lighting equipment. Electrical people have already appealed to the Chancellor of the Exchequer to ease the burden and the British Gas Council has also put forward reasoned arguments for the removal or reduction of the tax. The Council rightly says, for instance, that as wash boilers and kettles have been relieved of the tax it is logical to do the same for other water-heating appliances. It is also pointed out that space heaters are economical in that they can be used intermittently—but then, of course, the gas people are not bothered by peak-load considerations.

★ ★ ★

During the past week there has been a frantic scamper all over the country to put shop-window and sign installations back into working order so as to be able to switch them on on Saturday. Some of the seaside resorts appear to be doubtful whether they will be able to reassemble their decorative lighting in time for the summer season. Blackpool, the most prominent of all in this direction, has decided to operate its illuminations from 16th September to 24th October. I do not know what is happening at Southend. I mentioned some time ago that in a fit of pessimism the Corporation had decided to dispose of its illumination materials.

★ ★ ★

I was afraid that there would be objections to the raising of the ban on public lighting. In the House of Commons Sir Waldron Smithers suggested that it would be better to sell coal abroad rather than use it for giving more lighting. To which Mr. Gaitskell was able to reply that the kind of coal involved was not easy to sell. He also thanked Sir Waldron for his advocacy of a policy for which the Government had long been attacked. So far I have not come across any objectors on "psychological" grounds, i.e., that an abundance of light will encourage the reckless use of electricity all round, but no doubt there are quite a few of these puritanical persons.

★ ★ ★

In a letter to the *Daily Telegraph* Mr. J. Mortimer Hawkins protests against what he calls the secrecy of the Ministry of Fuel and Power as to the interests represented by the people appointed to the Electricity Consultative Councils. He says he has been told that members are not appointed to represent specific interests and yet, he points out, specific interests are expressly mentioned in the relevant clause of the 1947 Electricity Act. I agree that this reticence is inexplicable. Practically all the members' names were put forward by some organization or other, and these might easily be mentioned. When the Electricity Boards were appointed quite full particulars were given of the members' interests.

★ ★ ★

Last week I mentioned a suggestion made to me that if it were found that the rebate in electricity charges was less in total than the revenue gained from the winter surcharge it should be increased beyond the proposed figure of 0.1d per kWh. Replying to a Glasgow deputation last week Mr. Gaitskell, while refusing to withdraw the surcharge as requested, promised that when the financial situation resulting from the surcharge had been ascertained consideration would be given to the question of increasing the rebate. Sir Hector McNeill, Lord Provost of Glasgow, who headed the deputation, expressed the opinion that the increase already made in the secondary charge of the two-part tariff was in itself a deterrent to excessive use, without the surcharge.

★ ★ ★

I see that a number of local authorities are bemoaning the loss of rate relief which they used to derive from their electricity undertakings. It is still my view that if they had not indulged in this doubtful practice in the past they would not now have felt the loss. Their electricity consumers might have benefited in those days, but now they lose all round.

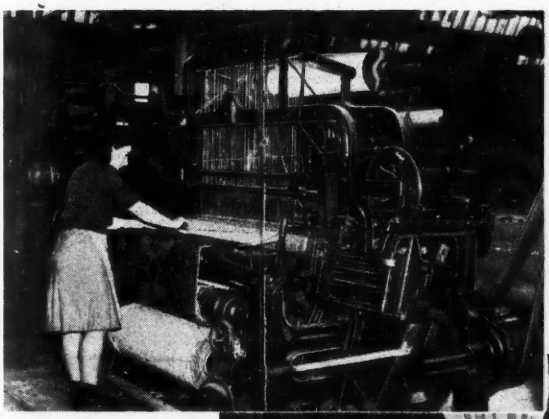
Electricity in Northern Ireland

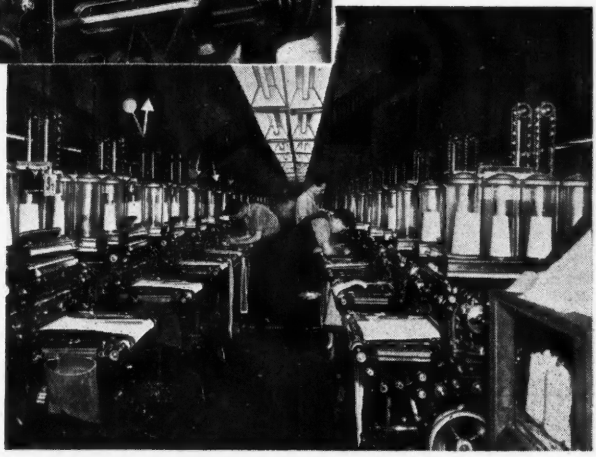
III.—ITS HELP IN ESTABLISHING NEW INDUSTRIES

In our issues of 4th and 18th February we described how electricity is enabling industries to be established in Northern Ireland. Our tour had taken us from Larne, through Coleraine to Londonderry and on to Omagh. The remainder of our journey was to Enniskillen along the Clogher Valley, and through Armagh, Portadown, Lurgan, Lisburn to Belfast, where we inspected new industries in the city.

UNTIL recently there was no industry of any importance other than agriculture in the whole of Fermanagh. Enniskillen, the county town, which was the next place we visited, now has a thriving new industry in the manufacture of silk, rayon and nylon fully fashioned hosiery. Occupying a disused county gaol, altered and adapted to their needs pending the completion shortly of a new 60,000 sq ft Government - built factory, Taylor-Woods, Ltd., an associate company of York Knitting Mills, Toronto, are already giving employment to 200 and will absorb another 200 hands when the new factory is in full operation. At the moment the maximum demand is about 50 kVA, but this will be trebled when the company moves into its new factory. From the electricity supply point of view the load is an ideal one since, in order to make full use of the costly machinery employed, the factory is operated for 24 hours a day.

The average daily production from the existing 200 machines installed is 250 dozen pairs of hose. When the move to the new factory is made there will be 528 machines available and provision is made in the design for a future extension to increase the number to 1,000. The





Axminster rugs are made in an old linen mill at Keady and (right) Fully fashioned hosiery machines are driven in batches of sixteen by 1½-h.p. motors at Taylor Wood's factory, Enniskillen

machines are arranged in banks of 16 for the convenience of operator utilization, each bank being driven by a 1½ h.p. motor. The lighting system is entirely by fluorescent tubes which provide 40 f.c. at working level. In the new factory four 80 h.p. motors will be in use for the air-conditioning system and four 7 h.p. motors for the forced draught of the oil-fired boilers for heating and works processes.

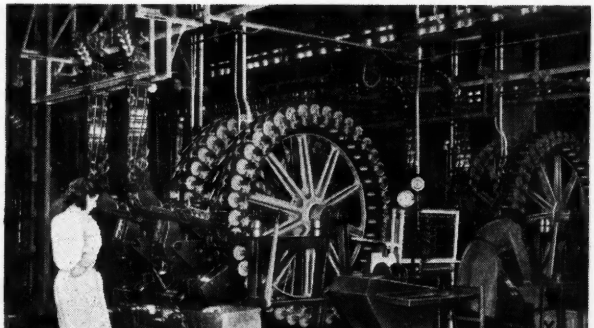
Automatic pre-boarding machines are used for shaping nylon stockings and further applications of electricity are to be found in the linking, seaming, boarding, testing (with compressed air) and transferring operations.

A further example of the way in which old buildings have been brought into service for housing new industries was shown us at Lisnaskea, a few miles south-east of Enniskillen. Here in a disused workhouse adapted by them to meet their requirements, Watts & Stone, Ltd., have just started making ladies' clothing. Though the amount of electricity used is not large, it is indispensable to the work. Apart from a 2 h.p. motor driving sixteen sewing machines, an electric cloth cutter is used, as well as electric irons and fluorescent lighting. (Another disused workhouse at Downpatrick has recently been converted by A. & F. Tallant, Ltd., for the manufacture of elastic belts and braces.) Also established recently at Lisnaskea are Wood Products, Ltd., who require over 150 kVA for the manufacture of brush and broom handles, etc.

Tuesday night we spent at Enniskillen. Shortly after starting out the following morning we passed through Brookborough, where Sir Basil Brooke, Prime Minister of Northern Ireland, has his estate. This is extensively electrified, one of the latest innovations being an electrically operated grass-drying plant.

Footwear is one of the latest products of Armagh, the Armagh Slipper Co. having recently equipped an old building as a factory. In the same town Bairns Wear, Ltd., is to occupy a new 82,000 sq ft factory, the construction of which has just been commenced by the Government, while Dufay-Chromex, Ltd., has taken over a gas cleansing station, which being readily air conditioned, has proved ideal for the spooling of camera films now being carried on there.

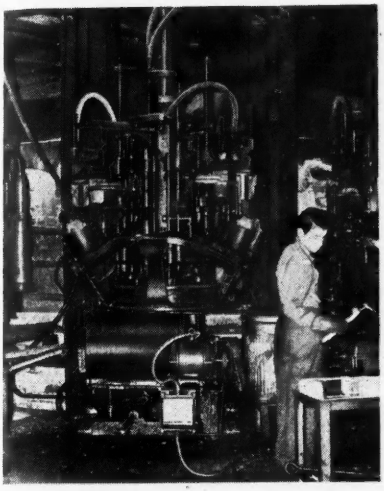
The re-introduction of the cotton industry to Northern Ireland is being undertaken in three areas. At Armagh, Ulster Ring Spinners, Ltd., require 400 kVA for the Drumcairne Mills, and Standard Mills (Annsborough) Ltd., are also spinning cotton at Annsborough, near Newcastle, Co. Down—in both cases occupying old mills which they have reopened. Horrockses Crewdson Co., Ltd., of Preston, will shortly need a substantial supply at Newry, where a 200,000 sq ft factory is under construction by the Government for their occupation. Thompson-Norris (Ireland), Ltd., also take 75 kVA for the making of card and fibre cartons at Warrenpoint, just south of Newry.



Cans are completely formed and tested on this line at the rate of 320 a minute in the all-electric factory of the Metal Box Co., Ltd., Portadown

The closing of the old Annvale Linen Mills at Keady, a few miles south of Armagh, in the early 1930s resulted in widespread unemployment in the nearby villages. Two years ago, however, the

Keady Carpet & Spinning Co., Ltd., took over the mills for the manufacture of Axminster rugs. These are made on



looms in a long strip 3ft wide and then cut to 6ft lengths. Some of the looms are driven by individual ¾ h.p. 720 r.p.m. motors and the remainder by line shafting from a 10 h.p. 720 r.p.m. motor. Altogether the various machinery used for washing the raw wool, blending it, carding, doffing, spinning, doubling, washing and weaving requires over 200 kVA.

Returning through Armagh we passed on our way to Portadown through an area engaged largely in fruit growing. Among the various industries connected with this are Northern Ireland Fruit Packers, Ltd. (who operate a plant for the preservation of fruit by gas storage), Fruitfield Preserves, Ltd., and Newforge, Ltd. The last-mentioned concern whose main factory is on the outskirts of Belfast, has recently installed new plant for the preservation of fruit and vegetables by quick freezing methods: these two factories between them require nearly 650 kVA.

The establishment of the factories handling fruit, vegetable, meat and dairy products has created a very heavy demand for cans for preserving. To meet this locally the Metal Box Co., Ltd., in 1946 opened a new factory at Portadown capable of producing two million cans a week. So satisfied was the company with the conditions that even before the factory had started operations a substantial extension was put in hand. Starting with 140 employees it now has 200. Production is practically automatic throughout. Requiring only to be fed with sheet metal, the latest type of machines installed completely form and test cans at the rate of 320 a minute on each of the two production lines. The factory takes nearly 150 kVA, and the company is especially pleased with the freedom from power cuts.

Nine glass bottles a minute are made on this triple-arm machine used by the Northern Glass Co., Ltd., Belfast

Electrical porcelain is now also made in large quantities at Portadown, George Wade & Son, Ltd., of Burslem, having converted an old linen mill for this purpose. The apparently unpromising lay-out of the works has in fact proved ideal: in particular the space used for the 200ft long tunnel kiln might in fact have been built for it. All types of porcelains are

Electrical porcelain is now made in large quantities at Portadown by George Wade & Son, Ltd. Our picture shows the fettling of switch-socket porcelains

produced—for switches, fuses, lampholders, heating elements, etc. A section of the works is devoted to domestic pottery.

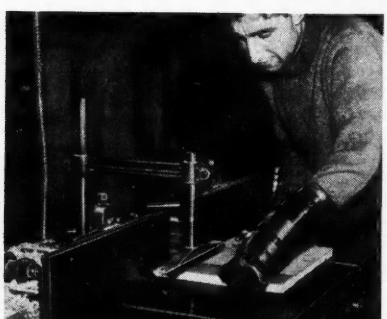
A big user of electricity at Lurgan is the United Kingdom Optical Co., Ltd., which requires nearly 500 kVA for the manufacture of lenses and spectacles. In this Government-owned factory of 60,000 sq ft floor area about 500 people are employed, and a 37,000 sq ft extension is now in course of construction by the Government which, when in full operation, will require another 250 kVA. The amount of work involved in an apparently simple product is surprising, some types of spectacles requiring over 200 operations, including the cleaning of the wire, gilding, cutting, welding, and the injection moulding of frames. Apart from the various drives one interesting application of electricity used in connection with the making of the frames is the heating and circulating of 40 gallons of oil to 170 deg C by means of three 2 kW boiling plates.

Recently Food Specialists, Ltd. a subsidiary of Bovril, Ltd., started production in a new factory in which they are manufacturing milk products at Magheralin, near Lurgan. Starting with a demand of 200 kVA they are already extending their factory and will soon require the full capacity of the Board's 300 kVA transformer. At Lisburn, a town of 13,000 inhabitants, seven miles out of Belfast, W. J. Gamble & Sons, Ltd., have taken over Knockmore Works, a wartime tank repair depot, for the manufacture of sheet metal products.

In Belfast, where we spent our last two days, we were at a loss to know how best to use our time. We might easily have spent the whole time in the huge shipbuilding works of Harland & Wolff, Ltd., by far the largest individual consumer of electricity in Northern Ireland with a maximum demand of about 15,000 kW. Equally well could we have visited the textile machinery works of James Mackie & Sons, Ltd. (who take nearly 3,000 kVA), the tobacco factory of Gallaher, Ltd. (600 kVA), the flour mills of Isaac Andrews & Sons, Ltd. (700 kVA), or the Belfast Ropeworks (2,000 kVA).

While, however, all these factories are constantly finding new applications for electricity, they have all been established some time, so we decided to concentrate on a few of the newer enterprises. Glass bottles are now being made in large quantities by the Northern Glass Co. To operate the forced draught fans for the furnace, the two single-arm and three triple-arm bottle-making machines and continuous annealing lehr, about 140 kVA is required.

Eventually fourteen factories will be provided in the Government's new Castlereagh Estate, but at the moment there are only seven, four of which are in production. The first we called at was the Lord Roberts Memorial Workshop. This was opened last August with the object of rehabilitating disabled ex-Servicemen. Providing employment at present for forty and eventually for about eighty men, this building is laid out for the manufacture and repair of furniture.



A comprehensive collection of electrically-operated wood working machinery has been provided at the Lord Roberts Memorial Workshop which trains and provides employment for disabled ex-servicemen

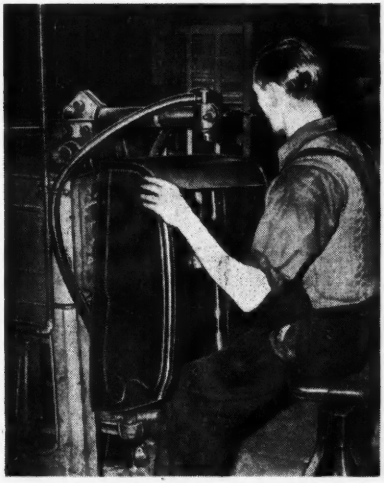
The comprehensive array of woodworking machinery here include a cross-cutting saw; a roller feed circular saw with two-speed motor; a panel plane (with two motors, one driving the cutting head and the other the power feed); surfacing, tenoning and mortising machines; a dimension saw; double-ended cross-cut saw; a band saw; a router operated through a transformer at 24,000 r.p.m.; a jig saw; a recessing machine which can also be used for drilling; vertical spindle

moulders; and various finishing plant, including a triple-drum sander, a 6in belt sander, a turning lathe and an air compressor for spraying and polishing. An extract fan system removes dust. All the machines have individual drive.

Nearby are the Government factories now in course of construction for the British Tabulating Machine Co., Ltd. The first 65,000 sq ft factory will shortly be in operation, but it will be some months yet before the other slightly larger bays, which will afford together some 200,000 sq ft, will be in use.

The newly developed long-life mercury dry batteries which are capable of continuous discharge at a steady voltage, and which are less than one-third the size of the usual dry batteries, are made in another factory on the estate, that of Mallory Batteries, Ltd., who take 350 kVA from the Belfast Corporation for their manufacturing processes. One type of cylindrical battery made here, measuring only $\frac{1}{8}$in overall height by 1in in diameter, is much in demand for hearing aids, giving 25-35 hours' service on the l.v. side, according to the type of hearing aid. This miniature l.v. battery has contributed to the development of the small streamlined one-piece hearing aid.

Metal and wood working equipment of all kinds, welders, paint spraying and dipping plant, electroplating and burnishing apparatus, and sewing machines require 200 kVA in the factory next door, where Lines Bros., Ltd., are making prams and folders, and fifty kinds of toys. The remaining completed factory on the estate, requiring 170 kVA is occupied by B.V.C. Industries (N.I.), Ltd., a subsidiary of the British Vacuum Cleaner & Engineering Co., Ltd., who are making radio apparatus, clocks, irons and the well-known automatic tea-making sets.



Welding "prametta" bodies at Lines Bros., factory on the Castlereagh Estate

Our final call was made at Short Brothers & Harland, Ltd. Since the company transferred the whole of its production from Rochester to Belfast in 1948 a considerable expansion has taken place, the company's main factory now occupying 28 acres and giving employment to 4,000 workers. Among the various types of aircraft now being constructed are "Sunderland" and "Solent" flying boats, amphibian "Sealands," and the Fleet Air Arm "Sturgeons."

To cope with the increasing production new electrical plant is now being installed involving the provision of a new overhead busbar system for the machine shop, toolroom and stores. The company has also been branching out in other directions and making milk churns and domestic wringers at Glen Works, Newtownards, and presswork for domestic and other products, as well as prefabricated aluminium chalets, at Hawlmark Works, Newtownards. Altogether the company has a demand of 3,000 kVA.

Lack of time prevented our seeing how electricity is serving a number of other new industries, for example, Blackwood Morton & Sons, Ltd., Belfast (carpets); George Borwick & Son, Ltd., Londonderry (food products); Lee Guinness, Ltd., Newtownards (precision engineering); and Down Shoe Co., Ltd., Banbridge. The last-mentioned company, which is associated with Lotus & Delta, Ltd., is at present working in an old building which has been adapted to serve as a training unit until a new Government factory is completed.

From the boat train during our journey from Belfast to Larne we had a close-up view of the 27-acre estate at Carrickfergus, where the finishing touches are be-

ing put to the vast plant already affording more than a million sq ft of floor space, in which Courtaulds, Ltd., are shortly to commence production of continuous filament viscose fibre. The unit, when in full production, will employ up to 2,000 workers, of whom the majority will be male, and since the process is a continuous one, the plant will have its own generating station, though a small supply of electricity will also be taken from the Electricity Board. The training unit is already in operation and production of filament will start later this year.

For their help in preparing these articles we thank the Ministry of Commerce, the Belfast Electricity Department and the Electricity Board for Northern Ireland, as well as the various manufacturers and their representatives.

Commercial Cooking

SCOPE FOR ELECTRICAL APPARATUS

A PAPER on "Commercial Electric Cooking Development" was presented last week by Mr. W. B. Steele (Eastern Electricity Board) to a sales lecture meeting held under the auspices of the London and Eastern Joint Area Committee of the British Electrical Development Association. Mr. Steele said that it was obvious that canteens in industry had not only come to stay but that their sphere of usefulness was increasing. Communal feeding was growing at an ever-increasing rate and 10 per cent of meals were now consumed away from home. This represented 186 million meals per week of which a great proportion would be cooked electrically.

Unlimited Opportunities

In 1938 there were 12,808 hotels, 14,512 restaurants, 46,412 boarding houses, 2,771 boarding schools, 4,024 cafés, 28,343 fish frying establishments and 1,021 milk bars. These represented potential electrical equipment to the value of £33,585,022, a demand of 7,347,249 kW and an annual consumption of 4,030,283,540 kWh. How large these figures were could be judged by the fact that the maximum demand of the country in 1947 was 9,271,000 kW and the electricity generated was 42,579,000,000 kWh.

The immediate demand for electrical equipment was great but the real demand could not occur until present restrictions were removed. At present only about 1½ per cent of all the cooking equipment in this country was electric, but electricity for cooking on a large scale was gaining in popularity, its principal advantages being the high price of competitive fuels, the scarcity of solid fuel and the demand for improved working conditions.

The capital cost of electrical apparatus was greater than for either gas or solid fuel, while the bare cost of wiring was higher than for the gas equivalent. The total cost of the installation, however, was governed by local circumstances. Ventilation must be taken into account and this was invariably dearer for gas and solid fuels than for electricity. The erection of flues and chimneys for gas and solid fuel equipment must also be included in total installation costs.

With regard to running costs, the main heat loss from electrical equipment was by radiation, its overall efficiency being high. As both gas and solid fuel needed ventilation to carry away the products of combustion the heat loss by radiation was higher than in the case of electrical equipment. An average of percentage figures given for overall thermal efficiencies of the various fuels gave 74.5 for electricity, 25 for gas and 5 for coal. The relation was therefore 1 therm of gas=11.3 kWh of electricity=44.6 lb of coal, or in monetary value the cost would be gas at 11.5d per therm=electricity at 1d per kWh=coal at 46s 8d per ton. The prices now ruling in the author's own district were gas 1s 8d. per therm, electricity 1d per kWh (two-part tariff) and coal 83s 1d to 96s 9d per ton.

Maintenance costs of electrical apparatus should be low since electrically produced heat was non-corrosive, and actual repairs, other than those due to mechanical damage, should be limited to replacement of elements due to fatigue. The efficient lives of the various equipments could be considered as 8-10 years for coal, 10-15 years for gas and 20-25 years for electric.

House Heating

AT a meeting this week of the Institute of Fuel Dr. J. C. Weston further amplified and commented upon the paper, already published, setting out the results of the first year's operation of the Building Research Station's experimental houses at Abbots Langley (*Electrical Review*, 18th March, 1949) which are equipped with a variety of different heating systems. Dr. Weston also discussed the possible bearing of annual heat requirements determined by those tests upon calculations for district heating schemes.

Wholesalers' Dinner

THREAT TO DISTRIBUTIVE TRADE

ABOUT four hundred members and guests were present at the annual dinner of the Electrical Wholesalers' Federation—the first since 1939—at the Savoy Hotel on 24th March. The president (Mr. H. Riley) was in the chair.

Mr. L. D. Gammans, M.P., proposed the toast of the Federation in an amusing speech which, however, had a serious main theme, the extension of nationalization to the prejudice of private enterprise. The threat to the distributive trade must be taken seriously and the wholesalers must be prepared to fight. But, said Mr. Gammans, they must also be prepared to offer a sound alternative. Too many people had been making an easy living out of prevailing conditions. With assured markets they did not want the return of free competition. The workers must be offered better conditions than were promised under nationalization and employers must prove to the workers how little of the revenue was taken by profit.

Useless Middlemen Condemned

In the course of his reply, Mr. Riley described nationalization as "legalized larceny." He quoted a recent statement by Lord Lucas of the Government's intention to loosen the grip of those restrictive practices which had gained such a firm hold on the distributive trades. One cause of high distribution costs was the "middleman who levied toll between producer and retailer, and served little or no economic interest." Mr. Riley said that the Federation agreed with Lord Lucas that the middleman who served no useful purpose should be eliminated.

From his recent experience in the United States he could refute the suggestion in the Simon Report on distributive costs in the building industry so far as electrical equipment was concerned. That mentioned 8 per cent as the margin taken by distributors in the United States and Canada. He had found the margins to be much higher than that, and in the main considerably greater than our own.

The speaker contended that if the distributive trade were abolished producers would need a colossal increase in manpower in many departments and would have to deal with thousands of small accounts with people of whom they had no knowledge. The wholesaler was an integral part of the country's economy.

The health of the guests was proposed by Mr. A. Glenister (past president), who said that the electrical industry should take a leaf out of the "Co-op" book. In this the manufacturers, wholesalers and retailers formed a complete system which made the movement very strong. He referred to the presence of Mr. W. H. Williams, chairman of the Electric Lamp Manufacturers' Association, whose industry was soon to be the subject of inquiry by the Monopoly Commission and to the connection of Mr. Erroll, another guest of the Federation, with the Electrical Industry.

Funds for Research

In replying to the toast Mr. Williams said that distribution had to be regarded from the public's point of view. He contended that it was not in the public interest for manufacturers to sell at a price which did not allow for research and development, or which led straight to bankruptcy. He believed that manufacturers should make the best possible products and ensure that they were distributed as economically as possible.

Mr. F. J. Erroll, M.P., who also replied to the toast, considered that traders who had to go before the Monopoly Commission had nothing to fear. The industry had established fair trading methods and this would be made manifest at the inquiries. It was difficult to attack the large State monopolies which were being set up because there were so many personal friends among their officials. He considered that these monopolies were creating a dull, uniform and inefficient structure which would reduce the standards which had been set up under free enterprise.

Mr. Erroll concluded with a reference to the purchase tax, which he maintained was thoroughly wrong in principle and far too expensive to apply.

A toast to the president was proposed by Mr. A. B. Wildsmith, director of the Federation.

New Council

Mr. J. W. E. Rutherford (Adamson & Co. (Tyne), Ltd.) will take office as president on 27th April. The members of the Council are Messrs. H. Riley, A. C. Baker, W. J. Bensley, G. W. Cartwright, J. M. Hollander, C. Hall Marr, A. Glenister, W. H. Swain and E. A. V. Peckham.

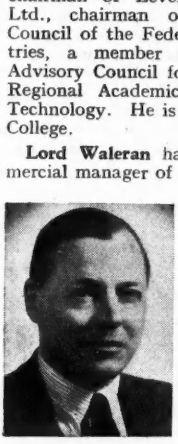
At the annual general meeting of the Federation a sum of £112 was collected in aid of the Electrical Industries Benevolent Association's funds.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE Minister of Fuel and Power has appointed **Mr. G. A. S. Nairn,** M.B.E., to be a member of the Merseyside and North Wales Electricity Board. Mr. Nairn is chairman of Lever Bros., Port Sunlight, Ltd., chairman of the N.W. Regional Council of the Federation of British Industries, a member of the N.W. Regional Advisory Council for Education and of the Regional Academic Board for Advanced Technology. He is a governor of Liverpool College.

Lord Waleran has been appointed commercial manager of the Electronics Division of E. K. Cole, Ltd. Since joining the company twelve months ago, Lord Waleran has been engaged on the commercial development of v.h.f. equipment and other specialized products. As a pilot of wide experience he has made a valuable contribution to the establishment of the company's aircraft communication system. During the war he was a wing commander and served in China as R.A.F. staff officer to General Chennault. His headquarters will be at the company's London office, 5, Vigo Street, W.1.



Lord Waleran

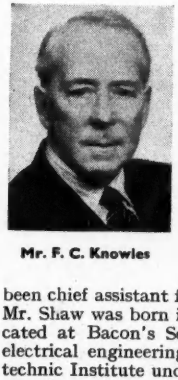
London Transport announces that **Mr. J. G. B. Bruce,** B.Sc.(Elec.), A.M.I.E.E., A.M.I.Loc.E., has been appointed production engineer at the Acton Works. Mr. Bruce was educated at Glasgow High School and Glasgow University. He joined London Transport's service in 1935 as an engineering trainee, and after holding various positions was appointed assistant production engineer at the Acton Works in 1943 and in 1947 took charge of this work in an acting capacity.

Mr. S. C. Ledingham, who was appointed general manager of Drake & Gorham Wholesale, Ltd., following the retirement of Mr. R. Wilson-Smith, has now been appointed a director of the company while retaining his position as general manager.

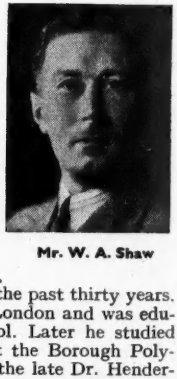
The English Electric Co., Ltd., announces that **Mr. W. D. M. Lywood,** who for a number of years has been on the technical staff of its Newcastle-on-Tyne office, has been appointed manager of that office in succession to **Mr. H. Ketton,** who recently retired after having been manager for twenty-seven years. Mr. Ketton will continue to act in an advisory capacity.

Mr. F. C. Knowles, M.I.E.E., for twenty-six years sales manager of Evershed & Vignoles, Ltd., retired from this position on 31st March and has been appointed a director of the company. He joined the firm in 1900, and was for several years associated with the development, manufacture and testing of Evershed products. In 1911 he became technical assistant to the managing director, the late Mr. E. B. Vignoles, and in 1923 was appointed sales manager. Mr. Knowles was educated privately, and later obtained a scholarship at the East London College (now Queen Mary College), where he took the mechanical and electrical engineering courses; subsequently he specialized in electrical testing at University College, London. His early commercial experience was obtained at W. T. Henley's Works, North Woolwich, and later with Foxcroft & Duncan, Dalston (successors to Paterson & Cooper, Ltd.). Mr. Knowles is a past-chairman of the I.E.E. Measurements Section. He is also a member of the Association of Mining Electrical & Mechanical Engineers (president of the London Branch in 1934-45), and of various technical societies, including the Society of Instrument Technology, of which he was a founder member and served on its first council.

Mr. W. A. Shaw has been appointed sales manager of Evershed & Vignoles, Ltd., in succession to Mr. Knowles, to whom he has been chief assistant for the past thirty years. Mr. Shaw was born in London and was educated at Bacon's School. Later he studied electrical engineering at the Borough Polytechnic Institute under the late Dr. Henderson. In 1913 he joined the test-room staff of Evershed & Vignoles, Ltd., and was for several years engaged in development and



Mr. F. C. Knowles



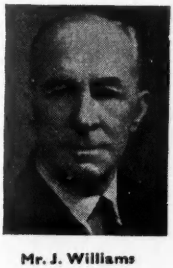
Mr. W. A. Shaw

experimental work on a wide range of instruments. He transferred to the commercial side in 1919 as a technical assistant.

The Minister of Transport has appointed **Captain B. H. Peter,** C.B.E., A.M.I.E.E., to be a member of the Appeal Tribunal constituted under Section 15 of the Road and Rail Traffic Act, 1933, in place of **Sir Archibald McKinstry,** D.Sc., M.I.Mech.E., M.I.E.E., who resigned on 28th February.

Mr. H. C. Goodman has been appointed assistant home sales manager of E.M.I. Sales & Service, Ltd.

The General Electric Co., Ltd., announces that **Mr. J. Williams** has been appointed manager of the North-Eastern Area of its home organization as from 1st April, in succession to the late Mr. W. Horsfall. Mr. Williams joined the Electric Lighting Supplies Department of the G.E.C.



Mr. J. Williams

Mr. H. A. Partridge

in 1910 at the age of sixteen. The outbreak of war in 1914 found him at the Newcastle branch, to which he subsequently returned after being wounded on the Somme and losing his left forearm. Soon afterwards he transferred to Cardiff and eventually became manager of the Osram Lamp Department. In 1931 he opened the Gloucester branch, remaining there for ten years, and in 1941 he was appointed assistant area manager of the South-Western Area.

Mr. H. A. Partridge has been appointed assistant area manager of the South-Western Area of the G.E.C. home organization as from 1st April, in succession to Mr. Williams. Mr. Partridge joined the company in 1929, and from 1930 until 1937 he was at the Swansea branch, where he became manager of the Household Appliance and Domestic Cooker Department. He later transferred to the Cardiff branch as manager of the Household Appliance and Refrigeration Department. During the war he was D.A.D.S.T. (Petrol) at 2nd Army H.Q. with the rank of major and on demobilization returned to Cardiff branch as manager of the Installation Supplies Department.

Mr. E. A. Reid sailed on the s.s. *Salamanca* on 25th March for Peru, where he proposes to further engineering business between Britain and Peru. Mr. Reid was educated in Peru and came to this country to serve an apprenticeship with Dick, Kerr & Co., Ltd., at Kilmarnock and Preston. He returned to Peru in 1907 and took part in the control and management of the Piedra Liza Foundry. He served in the Peruvian Army during the Ecuadorian campaign, and in 1917 took over the management of the technical section of Duncan, Fox & Co., importers of British products. Returning to this country in 1920, he joined the Canadian & General Finance Co., Ltd., a subsidiary of the Brazilian Traction, Light & Power Co., Ltd., in 1921, from which time until his retirement he was manager of the Purchasing, Shipping and Engineering Department.

Mr. E. A. Reid

Mr. K. G. Sillar, M.I.E.E., A.M.Inst.C.E., has been appointed regional controller for the Northern Region of the Board of Trade in succession to the late Mr. J. G. Rhodes and will take up his new duties at Newcastle on 11th April. Mr. Sillar has been deputy regional controller for Scotland since 1945.

Dr. R. W. Bailey, whose election as a Fellow of the Royal Society we briefly mentioned in our last issue, is consultant in the Research Department of the Metropolitan-Vickers Electrical Co., Ltd.

Dr. Bailey served a mechanical engineering apprenticeship at the Stratford Locomotive Works, gaining a Whitworth Exhibition. He attended Queen Mary College (then East London College) as a Directors' Scholar and obtained a Whitworth Scholarship which was held partly at the City and Guilds Central Technical College and partly as an electrical engineering apprentice with the British Westinghouse Electrical Co. After lecturing in mechanical engineering at the Battersea

Dr. R. W. Bailey

Polytechnic Institute he was for seven years principal of the Crewe Technical Institute. In 1919 he returned to the British Westinghouse Co. to take charge of the mechanical engineering and chemical laboratories, and later also the metallurgical laboratory in the company's Research Department. During many years in this capacity he devoted attention to mechanical engineering problems concerned with the strength and design of important parts of power plant, particularly the behaviour and operation of metals at elevated temperatures and high stresses in which he was a recognized authority. For a paper dealing with the utilization of creep test data in engineering design he was awarded in 1935 the Hawksley Gold Medal by the Institution of Mechanical Engineers. The D.Sc (Eng.) degree of London University was conferred upon him for his published work. In 1945 he relinquished administrative duties to give increased attention to special problems involved in power plant development by the company for high operating temperatures. He has been a member of Council of the Institution of Mechanical Engineers for a number of years and this year has been elected a vice-president.

Her Majesty Queen Mary having the working of a heat-controlled iron explained to her by Dame Caroline Haslett and (right) Miss M. G. Reading. Lady Swaythling is seen on the left

Her Majesty Queen Mary visited the headquarters of the **Electrical Association for Women** on 23rd March, where she was received by the Dowager Lady Swaythling, president, and Dame Caroline Haslett, D.B.E., director. She showed great interest in the way the organization was run and inspected all the offices, giving much attention to the work of each department. She was specially interested in the E.A.W. educational publications. Her Majesty spent a considerable time in the housecraft kitchen examining up-to-date electrical apparatus, and was pleased to accept an electric pad made by ex-Servicemen. She took tea with the National Executive Committee in the Members' Room.

Mr. F. P. Ayliffe, managing director of Alliance Engineering Co., Ltd., Singapore, Kuala Lumpur, and Ipoh, will shortly be visiting England in connection with engineering contracts being carried out in Malaya and to visit various engineering works for which the company are the Malayan representatives. His address while in England will be: c/o Alliance Engineering Co., Ltd., 15, Bishop's Bridge Road, Paddington, W.2.

Mr. E. T. L. Wyton has resigned his position as manager of the Industrial Heating and Cooking Department of Simplex Electric Co., Ltd. (a subsidiary of Tube Investments, Ltd), to take up an executive position in the catering industry in the north of England. His new duties will embrace industrial and private catering, as well as the purchasing and installation of kitchen equipment. He commences his new duties on 4th April. On leaving the service of the Simplex Electric Co., Ltd., he was presented with a gold wristlet watch by his colleagues and a gold cigarette case by the members of the Creda Social and Athletic Club, of which he has been chairman for many years.

Mr. C. I. Orr-Ewing, O.B.E. (Mil.), B.A., A.M.I.E.E., formerly B.B.C. television outside broadcast manager, has joined A. C. Cossor, Ltd., as commercial adviser (technical) and director of Cossor Radar, Ltd. Mr. Orr-Ewing was educated at Harrow School and Trinity College, Oxford, taking an honours degree in physics. After serving an apprenticeship with E.M.I. he became H.M.V. Northern Area sales manager in 1937 and the following year joined the B.B.C. on outside broadcasts (television). From 1939

Mr. C. I. Orr-Ewing

to 1941 he was on the radar staff of the Air Ministry and later served as chief of radar installation, R.A.F. 60 Group, Leighton Buzzard, becoming in 1943 chief radar officer, first with Mediterranean Allied Coastal Air Force and then on the air staff of S.H.A.E.F. He was appointed television outside broadcast manager to the B.B.C. in 1946. Mr. Orr-Ewing is a governor of the Northampton Polytechnic and of the Royal College of Horology.

After thirty years' service with the North-Eastern Electricity Board and its predecessor, the North-Eastern Electric Supply Co., Ltd., **Mr. M. H. Turner,** district engineer at Cold Hesledon (Co. Durham), has retired.

Mr. T. Rogers, district sales manager in Lancashire, Yorkshire & Cheshire for Enfield Rolling Mills, Ltd., has resigned from this position and is starting up on his own account as a manufacturers' agent with an office in Manchester.

Mr. R. A. Chalmers, who has been a director of Switchgear & Cowans, Ltd., since 1936, is resigning from the board.

Obituary

Mr. Walter Elderton Kidner, M.I.E.E., for ten years borough electrical engineer of Barking, died on 13th March at Bexhill Hospital at the age of seventy. After serving an apprenticeship with the Thames Iron Works, Mr. Kidner went to sea as second engineer with the Bucknell Steamship Line, and remained in their service throughout the South African War. He then spent some time with the Leatherhead and Horsham electricity undertakings. In 1912 he began his long association with the Barking Corporation, which lasted until his retirement in 1939 at the age of sixty. He was responsible for their generating equipment until 1926, when bulk supply was taken from the County of London Electricity Supply Co., the bulk supply substation being built to his specification. He also played a large part in the development of the L.C.C.'s Becontree housing estate, which was the largest of its kind at the time.

The late Mr. W. E. Kidner

The funeral service was held at St. Mark's Church, Littlecommon, Sussex, on 18th March and the cremation took place afterwards at Charing, Kent.

Col. W. A. Bristow.—The death occurred on the 24th March at the age of seventy of Col. Whiston Alfred Bristow, M.I.Mech.E., M.I.E.E., F.R.Ae.S., a pioneer in aviation and also in low temperature carbonization and the extraction of oils and chemicals from coal. In 1914 Col. Bristow joined the Royal Naval Air Service and was later transferred to the R.F.C., becoming chief engineer in the field in 1918 for both the Army and the Navy, and in 1919 he took part in the Peace Conference. In 1927 he became interested in low temperature carbonization, and his many interests in this field included the Coalite & Chemical Products, Ltd. (formerly Low Temperature Carbonization, Ltd.) and other coalite companies, of which he was chairman and managing director. He was also chairman of Rashleigh, Phipps & Co., Ltd., electrical engineers and installation contractors. Col. Bristow was the holder of the Gold Medal of the Institute of Transport for services to aviation.

The late Col. W. A. Bristow

Mr. E. P. Paxman.—The death is announced of Mr. Edward Philip Paxman, M.A., J.P., which occurred on 25th March at Colchester. Mr. Paxman was managing director of Davey Paxman & Co., Ltd., a director of Ruston & Hornsby, Ltd., and Master of the Worshipful Company of Farriers.

Mr. E. E. Allison.—The death occurred at Liverpool on 23rd March at the age of sixty-four of Mr. Ernald Edward Allison, North of England representative of Britmac Electrical Co., Ltd. Before joining the Britmac Electrical Co., Mr. Allison was with the Metropolitan-Vickers Electric Co., Ltd., and Elexcel, Ltd.

Mr. F. A. Nield.—The death occurred on 29th March at Eastbourne, in his sixty-ninth year, of Mr. Francis Andrew Nield, M.I.E.E.

Wills

Mr. J. C. Bentley, A.M.I.E.E., managing director of Royce, Ltd., who died on 29th October last, left £3,805 gross (£3,670 net).

Mr. A. R. Bacon, late chief station engineer for the County of London Electric Supply Co., who died on 13th January last, left £8,003 gross (£7,583 net).

CORRESPONDENCE

Surcharge—Rebate

"ELECTRICUS" is quite right in his statement in your issue of 25th March. I do defend the "all-electric" consumers but, I also believe the majority of domestic electricity users have to pay more whether "all electric" or "gas and electric" or "coal, gas and electric." The average consumption per annum mentioned by "Electricus" includes all the above cases. I have checked several consumers round the 2,000 units per annum figure and the result is still the same—the annual cost is greater.

To impose a restrictive measure on one kind of electricity user is to create a hardship; it also shows a preference to other users. Therefore, it would appear to be contrary to the Electricity Supply Acts.

However, Mr. Gill's question is quite simple: "Can anyone produce figures to prove that the politicians could have been right?" So far "Electricus" has not proved this.

J. ASHMORE,
Sutton Coldfield. M.I.E.E.

Radio Interference

DURING the report stage of the Wireless Telegraphy Bill in the House of Lords, Lord Cherwell moved to limit to 2s a person's liability to incur expenditure in fixing a suppressor to domestic apparatus.

Viscount Swinton said he had heard that some of these suppressors cost 11s to 15s. Unless Viscount Addison could give a firm undertaking that 4s would be the limit, the House should divide. Viscount Addison said he could not give the firm assurance asked for.

The amendment was carried by 42 votes to 23.

Lord Polwarth moved the first of three related amendments to establish the principle of allocation. in certain circumstances, of costs incurred in complying with a notice requiring a person to suppress interference. His main concern, he said, was with bodies such as electricity undertakings, which used equipment capable of causing considerable interference with radar or broadcasting stations. It was not fair in every case that the electricity authorities should be required to bear the entire cost of diverting h.v. lines.

Viscount Addison said that every possible provision was made in the Bill to meet disputed cases. There was the Advisory Committee, the objections to be met before the Postmaster General could make an enforcement order and the power of the tribunal to vary the order. In varying the order the tribunal could take account of the costs. The amendments would put arbitrary provisions into the Bill. The amendment was withdrawn.

A further amendment to empower the tribunal to apportion costs when they were in excess of £1,000 was carried by 44 votes to 17. The report stage was concluded.

South African News

From Our Cape Town Correspondent

PREPARATIONS are now being made for the erection of Cape Town's third big power station, to be built on a site adjacent to the existing Salt River station. It is estimated that the first unit of the new station (Salt River "B") will be required to meet the load by the winter of 1954 at the latest. The present schedule aims at making the first unit available as soon as the Table Bay station has reached its maximum generating capacity. There are at present four 40,000 kW sets at Table Bay, the additions to which should be completed this year. Space is provided for a fifth set needed to meet the winter load of 1951, when the station will have a total capacity of 200,000 kW. The cost of the Table Bay power station, including the enlarged building and two chimney stacks, will be about £4,250,000. Salt River "B" will have an ultimate capacity of 180,000 kW.

With the installation of a second 18,750 kW turbo-alternator the Pretoria power station has a sufficient capacity to meet the demands up to 1951 By then the new power station, on which work has already started, should be partially commissioned. The present station has cost the City Council about £2,000,000. but the new one will cost about £9,000,000. It should be sufficient to meet all demands up to 1960, when it is expected that a third station will be needed.

Shop Window Lighting

ON Tuesday a deputation representing the National Chamber of Trade, Association of British Chambers of Commerce and other organizations, met officials of the Ministry of Fuel and Power on the question of shop window lighting. The deputation asked that such lighting should be allowed before 7 p.m. next winter provided that shopkeepers kept within the permitted amount for the premises so as not to increase the peak load. A promise was given that this point would be considered.

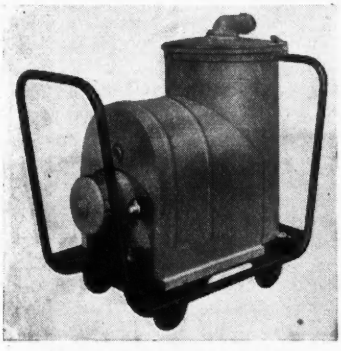
Supervisory Control

IN a lecture delivered before the Electrical Power Engineers' Association in London last week, Mr. W. A. Phillips (Automatic Telephone & Electric Co.) explained in some detail the use of telephone type equipment in supervisory control systems for power networks. He commenced by differentiating between and defining the terms remote control, centralized indication and supervisory control, followed by an outline of the facilities provided by and the general operational features of each arrangement.

Referring to the component parts employed in supervisory control systems, Mr. Phillips described with the aid of numerous slides the construction and operational characteristics of the electromagnetic relay and uniselector, passing on to the assembly of control room and sub-station apparatus and the general arrangement of typical control rooms. After dealing with basic circuit arrangements the lecturer explained voice frequency signalling, concluding with a discussion on direct and indirect methods of remote metering.

Chimney Sweeping Electrically

WITH the spring cleaning "offensive" in progress the latest method of chimney sweeping is of more than usual interest. In the past chimney sweeping has



B.V.C. chimney sweeping apparatus

meant for the housewife the removal of furniture, hanging of dust-sheets and all the usual preparations that have been associated with this unpleasant but necessary task. To-day, with the aid of vacuum cleaning plant manufactured by the British Vacuum Cleaner & Engineering Co., Ltd., Leatherhead, it is actually possible for the chimney sweep to wear a white coat without getting dirty. The "T.5" machine in question is fitted with a 2-in. hose connection point to facilitate the bulk cleaning required with this type of work. If needed, a reducer coupling can be fitted to enable standard surface cleaning equipment to be used.

Supplied with the machine is a special screen and canvas shield through which the extension rods for the brush are fed. The screen fits over the fireplace opening and is made for various sizes. A connector is fitted to the bottom of the screen, into which the hose from the machine is fitted. The screen is taped to the fireplace surround, and then the normal cleaning is carried out. Simultaneously the vacuum cleaner is extracting the soot as it becomes dislodged. When the operation is completed the screen is removed and any remaining soot is cleared by the cleaner.

Physical Society Exhibition

THE annual exhibition of scientific instruments and associated apparatus organized by the Physical Society is being held next week (5th to 8th April) in the Physics Department of Imperial College, South Kensington. The wide range of exhibits to be shown by industrial concerns, research associations and universities will illustrate the increasing application of physical principles to the solution of a diversity of problems and the advances in equipment design made during the past twelve months.

In all there are 140 exhibitors, 23 fewer than last year, comprising 117 in the trade section and 23 in the research and educational section. The latter, owing to space limitations, are not separated from the trade exhibitors.

Soil Warming

THE Coventry Electric Club held its last sessional meeting at the Electricity Sports and Social Club, with Mr. Godden in the chair, when Mr. F. E. Rowland (G.E.C.) lectured on "Electricity in Horticulture," with special reference to soil warming. He explained how the growth of plants is dependent on root development, which, in turn, is influenced by such conditions as soil texture, moisture content and, in particular, temperature. Many plant troubles can be traced to cold soil, and electric soil warming is a ready means of obtaining the desired temperature. Once the equipment is installed, little further labour is required to maintain it, for the warming can be effected entirely automatically and as a rule the dosage method of applying warmth, developed by the Electrical Research Association, is used. The daily dosage for a salad bed in early spring is 40-45 Whr/sq ft in the south of England and 50-55 in the north.

Industry and the House

Trading by Electricity Boards

By F. J. ERROLL,
M.A., A.M.I.E.E., M.P.

THE Economic Survey for 1949 made a subdued appearance in the House of Commons. The third such document, it is by far the most modest of the series. Those who prepare the Survey have learnt the difficulties and dangers of prophecy, and they are therefore much more cautious in their estimates. In a document singularly free from political bias, it is unfortunate to find references to the lack of co-ordination before the electricity supply industry was nationalized. Readers will remember that the estimated figures in the previous Survey were very greatly in excess of the 1948 achievements of the B.E.A.

The 1949 Survey admits that these figures were "based on too optimistic an assessment of the speed with which the work could be done." The Survey goes on to say: "At that date it was also not possible to assess the extent of the delays which resulted from the lack of co-ordinated ordering and construction work before the electricity supply industry was nationalized." The Survey hopes that the peak load gap will be finally closed during the year 1952-53, but adds that the supporting figures "must be treated with considerable reserve."

Objections to Surcharge

The winter surcharge referred to by "Reflector" in the issue of 25th March is causing M.P.s of all parties some concern. Constituents are not slow to write in to their M.P.s about what they feel to be an injustice. It is quite plain that despite the extensive publicity given to the reasons for the surcharge, many of those affected have failed to realize its true purpose. Some have undoubtedly taken the matter up with their local Electricity Board, but others have preferred to get in touch direct with their M.P.s.

When a constituent writes to his M.P. about a matter which is the direct responsibility of a Government Department the usual procedure is for the Member to write to that Department. The Department investigates the matter and sends the Member a full explanation. When the new nationalized undertakings came into being there was some apprehension as to how Members could satisfactorily take up the grievances of their constituents. The National Coal Board, the British Transport Commission, and the British Electricity Authority are all doing their very best to furnish full explanations when Members write to them.

The British Electricity Authority is setting a particularly high standard in this respect. Complaints from constituents are investigated fully and promptly, and in some cases a special visit is made to the individual concerned to clear up his difficulties. At a time when many are complaining about the electricity surcharge, the helpful attitude of the B.E.A. is much to be appreciated and goes some way towards disposing of the charge which is levelled against all monopolies, namely, that they tend to be blind to the grievances of consumers.

"Free Competition"

Traders, however, will not like the determined way in which the Area Boards are entering the field of wholesale and retail trading. In answer to questions in the House last week, Mr. Gaitskell made it quite clear that he does not intend to intervene since the Boards are acting within the powers conferred upon them by Parliament. This Mr. Gaitskell described as "free competition." But at the same time the Government is said to be preparing a plan for the elimination of wasteful duplication of the channels of distribution, which it considers leads to unnecessarily high costs.

As the Monopolies Commission is going to investigate two branches of the electrical manufacturing industry the methods by which it will conduct its inquiries will be of great interest. In the supplementary estimates for the Board of Trade there appears a sum of £5,700 for the initial expenses of the Com-

mission. This provided an opportunity of discussing the matter briefly in the House of Commons before the guillotine fell on outstanding estimates. Firms want to know how much warning they will be given before they are required to appear. They need to know whether they may be represented by counsel, or whether it will normally be the task of the chairman or managing director of the company to state the company's case. Alternatively, the case may be presented collectively by the trade associations themselves, although that would not cover those firms outside its membership.

Mr. Edwards, the new Parliamentary Secretary of the Board of Trade, pointed out in reply that the Commission was an independent body and not an agent of the Board of Trade. Procedure was laid down in Section 8 of the Act setting up the Commission, subject of course to any directive from the Board of Trade which would, however, have to be laid before the House of Commons first. Mr. Edwards also claimed that there was an absolute safeguard under Section 8 for all the people who had to appear before the Commission.

This week Westminster is full of rumours about the 1949-50 Budget due to be presented on 6th April by Sir Stafford Cripps. This year there are even more deserving causes for taxation relief than usual. A reduction of taxation levied on industry is justified on all grounds of reason if Britain is to maintain her capital equipment in a fully efficient state. Such relief has, however, little electioneering value and purchase tax reliefs to aid the housewives' budget, and a further repayment of post-war credits are likely to secure a higher priority. Some optimists even hope for a reduction in the standard rate of income tax!

PARLIAMENTARY NEWS

By Our Special Reporter

LAST week the House of Commons gave an unopposed second reading to the Commonwealth Telegraphs Bill. Mr. Paling, the Postmaster-General, explained that its primary aim was to give effect to the Commonwealth Telegraphs Agreement of 1948, and in particular to set up the representative central body of the partnership—the Commonwealth Telecommunications Board. A further aim of the Bill was to transfer to the Post Office all the assets in this country of Cable & Wireless, Ltd., except such assets as could conveniently be transferred without specific provision in the Bill. As regarded the assets of Cable & Wireless overseas, when the proposed reorganization of the company was announced in 1947 it was made clear that it would remain as a company to operate its overseas services. Finally, the Bill aimed at extending the Postmaster-General's power to make pooling arrangements with regard to the revenue from external telecommunications.

In order to secure the advantages of full integration of the United Kingdom services with all parts of the world—both by telegraph and telephone—which the passage of the Bill into law would make possible—he proposed to set up within the administrative department of the Post Office responsible for the external telecommunication services of this country, an External Telecommunications Board, on which the company would be fully represented. Co-ordination with the other countries of the Commonwealth would be ensured by the representation of the United Kingdom on the Commonwealth Telecommunications Board.

Imported Lamp-making Machinery

Mr. C. Poole asked the President of the Board of Trade to what firms were granted licences for the importation of lamp and valve making machinery to the value of £15,130 during January, 1949, and what types of machines were so licensed.

Mr. H. Wilson said it was not the practice of the Board of Trade to disclose the names of firms to whom import licences had been granted. The figure quoted represented the actual imports during January, 1949. The licences covering these imports would have been issued during the preceding six or twelve months. It was not possible to specify the particular types of electric lamp and valve-making machinery imported.

Boards' Retail Sales

Mr. Erroll asked the Minister of Fuel and Power if his attention had been drawn to the action of the Midlands Electricity Board in entering the retail electrical trade, including wireless and television sets, and of other Area Boards in retail selling of lamps; and

if, in view of the fact that the public was already well served in this respect, he would make a statement as to the instructions he would issue to the British Electricity Authority to desist from ancillary activities of this character and concentrate on its main functions of providing enough cheap electricity for all.

Mr. Baldwin asked the Minister of Fuel and Power whether he was aware that the decision of the Electricity Boards to undertake the retail sale of wireless and television sets would have a prejudicial effect on the livelihood of retail traders.

Mr. Gaitskell said he was aware of the action taken by the Midlands Electricity Board and other Area Boards in retailing and servicing electrical fittings. The Area Boards were acting within the powers conferred upon them by Parliament in the Electricity Act, 1947, and he did not propose to intervene.

Mr. Erroll asked if this was not an intervention into a well covered field, an example of the very duplication of retail trade facilities which the Government deplored in other connections. Mr. Gaitskell replied that he should have thought it should be more properly called free competition.

Mr. Baldwin asked if the Minister was aware of the danger when these Boards undertook retail services that they would cover up losses, if they found competition too strong, by extra charges upon the consumers of electricity. Mr. Gaitskell said that that would be disclosed in their accounts.

Mr. Gaitskell agreed with Mr. Palmer that electric lamps, television receivers, wireless sets and electrical apparatus had been retailed by electricity undertakings for a great many years.

Electricity Surcharge

Mr. Granville Sharp asked the Minister of Fuel and Power whether he was satisfied that the national interests had been furthered by the application of the Clow differential; what evidence there was that domestic consumption of electricity at peak-load periods declined as a result of the surcharge; and whether he would make a statement about future policy.

Mr. Gaitskell said he considered that the introduction of the differential tariff was one of the factors which restrained peak demand this winter, reduced the amount of load shedding and so enabled production to continue without interruption. He had no statement to make at present about the policy to be adopted next winter.

Television Standards

Mr. Langford-Holt asked the Postmaster-General whether he would commence discussions with representatives of Western European and other nations with a view to achieving uniformity in lineage and frequency in television transmissions.

Mr. Paling said the United Kingdom was already taking part in the examination of television standards which was being made by a constituent organization of the International Telecommunications Union.

Cable and Wireless Research

Replying to Mr. Skeffington, the Postmaster-General said that arrangements already existed to co-ordinate the research of Cable & Wireless, Ltd., and the Post Office in matters of common interest.

List of Controls

Mr. G. Strauss, Minister of Supply, told Mr. W. Shepherd that manufacturers needed licences from his Department to produce certain electrical appliances listed in the Schedule to the Electrical Appliances (Control of Manufacture and Supply) Order, 1942 (S.R. & O. No. 1453 of 1942), and six classes of engineering machinery, plant and appliances listed in paragraph 1 of the Machinery, Plant and Appliances (General) (No. 20) Order, 1948 (S.I. No. 2528 of 1948). Even within this restricted field many items were covered by open general licence.

Raw materials controls were limited to non-ferrous and light metals, and iron and steel. His Department was the sole purchaser of virgin copper, lead and zinc, and controlled the acquisition of these metals in the form of ores, concentrates and scrap, as well as in their virgin form. Only the allocation of lead was strictly controlled. All tin metal produced in the United Kingdom was purchased by his Department and sold to the manufacturers. Similarly all virgin aluminium and virgin aluminium alloy produced in or imported into the United Kingdom, apart from a small quantity for export, was purchased and sold to the fabricators. The acquisition, disposal, treatment, use and consumption of iron and steel, and the principal ores from which they were produced were controlled, and also the acquisition and disposal of scrap.

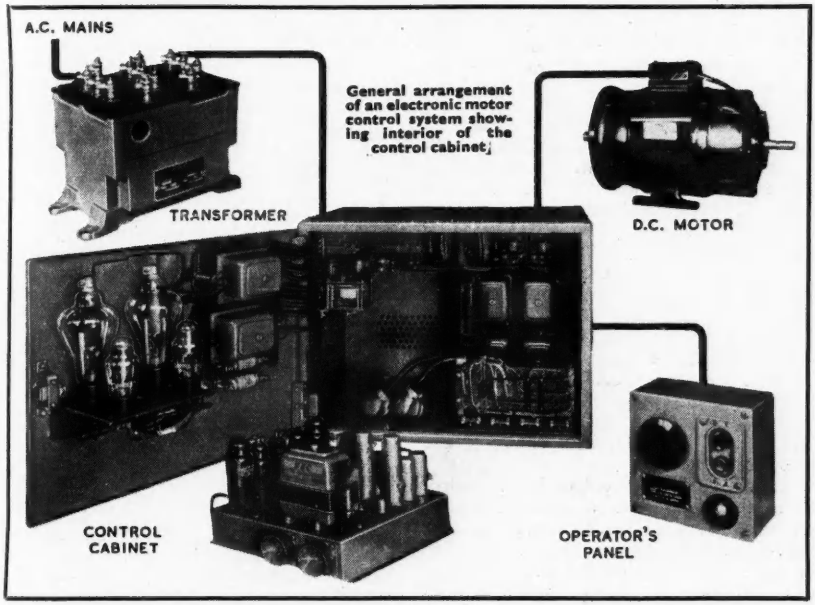
Industrial Productivity

Replying to Mr. Erroll, Mr. W. Whiteley, Parliamentary Secretary to the Treasury, said that no precise estimate was possible of the cost of the Committee on Industrial Productivity and its Panels. Assuming the continuance of the Committee on its present basis, it looked as though the cost during 1949 would be of the order of £6,000.

Electronic Motor Control

PRINCIPLES OF OPERATION AND APPLICATIONS

AMONG the various systems of controlling electric motors, the valve-operated or, to use a popular expression, electronic method possesses important advantages in that it is static, requires considerably less control power than other systems, and has a quick response. It is possible to vary speed continuously over a wide range, 50 to 1 by armature control, and as much as 200 to 1 by a combination of armature and field control. It is also easy to make the action completely automatic.



General arrangement of an electronic motor control system showing interior of the control cabinet.

In principle, most systems of electronic speed control depend on the operation of a d.c. machine by means of rectified a.c. In the case of small powers, rectification is performed by grid-controlled gas- or vapour-filled hot cathode valves, or for larger powers by one or more grid-controlled mercury arc rectifiers.

Armature voltage is controlled by varying the voltage applied to the rectifier grids, which is alternating and synchronous with the input to the anodes. A phase relationship exists between the grid and anode inputs, such that the maximum output obtainable from the rectifier is determined by the constants of the circuit. By varying this relationship, the d.c. voltage may be reduced ultimately to zero, so that complete control of the motor is obtained. The phase relationship is varied statically by means of a phase-shifting device comprising a number of fixed resistors and capacitors and a saturable reactor. Control of the d.c. saturating current and consequently of the phase relationship is effected by means of a valve-operated amplifier, the last stage of which comprises a valve whose anode is in series with the reactor saturating winding. The amplifier input is the difference between the rectifier

output voltage and an adjustable "reference" voltage, which is under the control of the operator. The amplifier then controls the phase of the rectifier in such a way as always to reduce this difference to the minimum. Thus the rectifier output will automatically follow any change in the reference voltage. A circuit is also incorporated in the amplifier which limits the maximum armature current to some desired value above full load. With this system the motor can be automatically started, reversed at any speed, and even stalled under overload conditions without an excessive rise of current.

Compensation is also included for the natural speed-load characteristic of the motor, so that an approximately constant pre-set speed is obtained at all loads up to full load. The operator is provided with start, stop and, where required, reversing buttons and a speed-setting knob. Sudden rotation of the speed-setting knob from the minimum to the maximum position will not result in excessive current flow. This device usually takes the form of a small potentiometer dissipating only a few watts and providing continuous stepless adjustment.

When a very wide speed range is required, the field current is also electronically controlled, the field potentiometer being mounted on the same shaft as the armature voltage potentiometer, so that the entire speed range is obtained with a single knob control. Arrangements are made so that the motor always starts with full field, irrespective of the pre-set value.

It will be appreciated that the control is of the error-actuated closed-sequence, or servo type; in fact, there are two closed loops, one to control the armature voltage and the other the motor current. By suitably arranging the saturation limit of a valve, the current control is made inoperative below a pre-set value.

Examples of the practical application of the foregoing are the controls which have been fitted by the General Electric Co., Ltd., to a number of centreless grinders, a particular case being for the external grinding of small ball bearing rings. In order to ensure uniformity of size and finish, stability of feeding speed is essential.

The components are ground by passing between the grinding and control wheels, each of which is driven by its own motor. The rings are moved forward across the grinding wheel by a horizontal ram which is driven through a clutch and worm wheel by a small d.c. motor.

This motor, through suitable gearing, drives a solenoid-operated clutch, which, when closed, drives the ram forward, at the same time extending a tension spring. At the end of its travel, a limit switch de-energizes the solenoid. This enables the spring to return the ram to its original position, when another switch energizes the solenoid, starting a fresh cycle of operations.

The electronic equipment controlling the motor speed is designed to operate from single-phase 400 V 50 c/s mains, and its function is to provide continuously variable speed at any setting from 200 to 2,000 r.p.m. by armature control, and from 2,000 to 2,500 r.p.m. by field control.

Bulk Supply Tariff

MODIFICATION, by way of reduction towards uniformity, of the tariff for electricity sold in bulk by the British Electricity Authority to the Area Electricity Boards is announced to come into operation to-day, 1st April.

The new price to be paid will consist of a fixed charge of £3 10s/kW of maximum demand, determined during any half-hour between the hours of 7 a.m. and 7 p.m. in the preceding year of account, plus a running charge of 0.335d/kWh supplied. The latter is subject to variation of 0.0007d/kWh for each penny by which the cost of fuel consumed is more or less than 38s a ton, provided the charge for the year ending 31st March, 1950 (when these adjustments will cease) shall be increased or decreased by a percentage (ranging from 0.5 to 5 per cent) of the sum which would have been payable by the several Boards had the running charge not been subject to variation on account of cost of fuel. In the case of two Boards there is no adjustment.

Engineers' Guild

A North-Eastern Branch of the Engineers' Guild is to be inaugurated on Thursday next at the Lecture Hall, City Museum, Leeds. The inauguration is to be preceded by a discussion on "The Guild as an Association of Professional Engineers." Mr. T. Knight will preside, and the speakers will be Messrs. E. W. Greensmith and C. J. S. Anderson.

Illuminations Again

AT a special meeting of Blackpool Town Council last week it was decided to hold autumn illuminations this year from 16th September to 24th October. The cost is estimated at £50,000. Mr. F. W. Field, who retired in 1946 from the position of illuminations engineer, is to be recalled to organize the arrangements.

Sunderland Corporation Seaside Development Committee has appointed a special committee to consider reviving the illuminations arranged before the war on the sea front and in Roker Park.

Encouragement of the use of more light is being given to the people of the West Country by the South Western Electricity Board, which has undertaken the floodlighting of many buildings in its area. The Board says that it is as tired as the consumers of austerity and wishes them to take full advantage of the relaxation of the restrictions during off-peak hours. The buildings which are being illuminated by the Board are as follows:—Bristol: Electricity House, Colston Avenue, and Cabot Tower. Bath: Shan Castle, Holburne Museum, City Weirs and Pulteney Bridge, the Abbey tower and west front, St. Stephen's Church, Pump Room (churchyard frontage) and the Electricity Service Centre. Exeter: Cathedral tower and west front. Taunton: Municipal Buildings, County Hall, St. Mary's Church and the Electricity Service Centre. Bridgwater: Municipal Buildings.. Lyme Regis: The Cobb. Minehead: Parish Church. Plymouth: Guildhall tower. Torquay: Rock Walk, Town Hall, Marine Bath, Pavilion and Electricity House.

With the removal of lighting restrictions this week-end, shops and stores will once again, after nine years, be preparing schemes for window lighting. Messrs. Liberty's have quickly got off the mark with an installation consisting of a mixture of natural fluorescent and tungsten lamps illuminating a red and white display against a duck-egg green background. The accompanying picture was taken during a "try-out" of the installation, which has been arranged by Mr. E. Lucking, the display manager.

Fluorescent and tungsten illumination at Liberty's

Housecraft Advisors

THERE was a full attendance at the Charing Cross Hotel last week for the second annual dinner of the Association of Electrical Housecraft Advisors. Dame Caroline Haslett (president) occupied the chair and said how glad she was that members were getting together to fight their own battles. They had, informally, the approval of the Ministry of Education.

Miss C. L. N. Cowper (Inspector, Ministry of Education), proposed the toast of the B.E.A., remarking upon the enormous growth of the use of electricity. She said that it would be foolish to offer something and then leave the public to find out how to make use of it, so electrical advisors could be a useful link and necessary buffer between the consuming public and commercial supplier. In one way, however, the domestic consumer was backward, namely, in respect of lighting. She was glad the E.D.A. was going to stay.

Sir Henry Self (B.E.A.) responded with the observation that no nationalized industry could play its full part unless women's role in it were assured. The future lay before them, if they qualified themselves. Frustration could be a good thing, provided it came to an end; and it had, for they could now go into people's homes and urge more use of electricity, provided they kept off the peak. They were now entitled to use more, at the right times, for how else could the additional generating capacity that was being provided be made to pay for itself? Women must have career prospects and the

machinery now existed for them to negotiate what they desired to shape, the family destiny.

Mr. J. H. Warren (general secretary, N.A.L.G.O.) proposed the toast of "The Association," explaining that its organization was the largest "black-coat" union in the world. There had been some criticism, even at Board levels, where stratified grading for recruitment seemed to be advocated; whereas he had always held the contrary view that, in spite of organization problems, the domestic machinery of N.A.L.G.O. should be capable of representing all, including provision for such groups as the A.E.H.A. to claim representation. Indeed, he had gone further and, in a circular signed last week, he had named the Association as the representative body of its particular craft. Its work was of the utmost social value and its members had the opportunity of lightening the age-long burden borne by women in the home.

Miss M. G. Gorse (chairman of the Association) responded with an expression of pride in their membership of 200; the thirty who set out to make the Association had kept their pledge. They had not been popular and still were not, but the door had been opened wide by the Central Authority, if not by some of the Boards. She thanked the N.A.L.G.O. for the friendship it was offering them.

Miss G. V. Eyres (Newport, Mon) proposed the toast of the guests, and in responding for them Mr. V. W. Dale (E.D.A.) said he hoped both the head and heart had changed with respect to women's place in the electrical industry. They were establishing a new name which meant something more than demonstrator, and consumers would expect that much more of them in future.

E.D.A.—E.A.W. Conference

Representatives from all parts of the country attended the fourth post-war conference of electrical housecraft advisors, senior demonstrators and senior showroom assistants, organized by the British Electrical Development Association and the Electrical Association for Women. The conference, which was held at Cowdray Hall, London, W.1, from Tuesday to Friday last week, was opened by Mr. E. W. Bussey, of the British Electricity Authority. The conference was not confined entirely to electrical subjects and interesting lectures were given on such diverse matters as rayon manufacture, laundry methods, nutrition and the demonstrators' work, the use of modern soapless detergents, and floral decoration.

Two E.D.A. contributors were Mr. P. Honey, who gave a talk on "Electric Water Heating," and Miss E. M. Eaves, who spoke on "Visual Aids," in which she referred to the use of films, film strips, etc., and the kinds suitable for different audiences. Miss Dorothy Taylor, holder of the third Caroline Haslett Travelling Exhibition, gave an excellent contribution on "Some Aspects of Canadian Domestic Electrification," following her recent visit to that Dominion. During the Conference a visit was paid to the Building Centre to see the water heating display there.

The conference concluded with an informal luncheon at the Connaught Rooms, over which Mr. V. W. Dale, general manager and secretary of E.D.A., presided. Mr. Dale thanked all those who had contributed to the success of the conference, and Dame Caroline Haslett also spoke.

Electricity Consumers' Council

LAST year, when the members of the Committee of the Smaller Municipal Electricity Undertakings had handed over to the new authorities, it was decided to keep the organization in being as a "National Electricity Consumers' Council."

A special general meeting of the Council was held in London on 24th March at which it was agreed that in future the body should be known as "The National Municipal Electricity Consumers' Council." Councillor Selwyn Jones (Newton-le-Willows) was elected chairman, and Mr. A. J. C. De Renzi (former borough electrical engineer, Newcastle under-Lyme) is to continue to act as hon. secretary.

The purposes of the Council are to safeguard the rights of local authorities as large electricity consumers; to secure co-ordination between local authorities and the suppliers of electricity in relation to housing schemes, street lighting and other local authority services; and to further the general interests of electricity consumers.

The opinion was expressed that the work of the Electricity Consultative Councils should be decentralized and that they should be given certain executive powers. It was suggested that District Committees should be set up, composed largely of former members of local electricity committees. Another matter discussed and deprecated was the restriction or abolition of the use of prepayment meters.

It was emphasized that the Association was in no way hostile to the new authorities but desired to co-operate by bringing to the attention of the B.E.A. suggestions and constructive criticisms for the improvement of the service.

COMMERCE and INDUSTRY

Condenser Agreement : Plant for Johannesburg Extensions

THE Telegraph Condenser Co., Ltd., and the United Insulator Co., Ltd., have issued a joint statement to the effect that the companies have come to an agreement under which the Telegraph Condenser Co. will undertake the production and sale of silvered mica and ceramic condensers hitherto made by the United Insulator Co. Ceramic dielectrics (made by U.I.C.) will also be sold through T.C.C. Key personnel from the U.I.C. research, development, production and sales departments will join the T.C.C. organization. The United Insulator Co., Ltd., will specialize in the manufacture of ceramic dielectric, insulators and other ceramic bodies.

The foregoing arrangement will enable U.I.C. to provide the additional manufacturing facilities required to meet the increasing demand for such articles, and also enable its research organization to concentrate upon the further development of electrical ceramic materials. All deliveries against orders outstanding at 31st March for silvered mica and ceramic condensers (and ceramic dielectrics for the fabrication of condensers) will be invoiced by T.C.C., to whom inquiries and orders should be sent on and after 1st April.

Electricity Staff Compensation

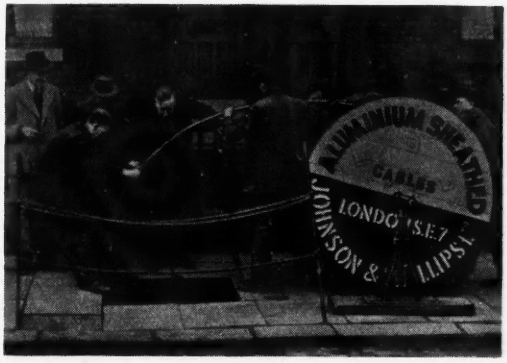
The Electricity (Staff Compensation) Regulations, 1949, made by the Minister of Fuel and Power under Section 55 of the Electricity Act, 1947, have now been approved by both Houses of Parliament. Copies of the Regulations (S.I. 1949 No. 40) can be obtained from H.M. Stationery Office (4d). The Regulations were briefly summarized in our issue of 25th February.

Conduit Price Reduction

Price reductions throughout the range of G.E.C. pressure die cast conduit fittings come into force on 1st April. Full particulars of the new prices, which apply to a total of 200 accessories, are obtainable from all G.E.C. branches.

Laying Aluminium Sheathed Cable

A 200 yd. length of 1 sq in 4-core J. & P. seamless aluminium sheathed cable was recently installed in a duct line at Portwood, Stockport, by the North-Western Electricity Board to test the suitability of the new cable for such installations. A length of 170 yd of the cable was pulled into a duct partly 3in and partly 4in in diameter and the remainder looped and taken under a roadway through a duct turning at right angles to the first. Although the duct had not been used for many years and its condition was suspect, the cable was pulled through without difficulty.



Pulling seamless aluminium sheathed cable through a duct

New "Underground" Stock

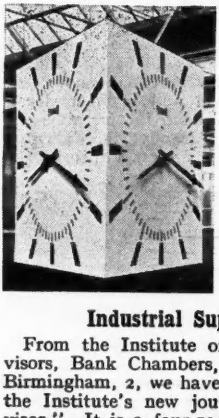
London Transport has placed an order to the value of £1,200,000 for 89 new tube cars, delivery of which should commence in the middle of next year. This is the first order to be placed since the war for tube rolling stock as opposed to surface line stock. At present the most modern cars in service on tube lines are of the "1938" type. The 1949 stock will be identical with these except for minor improvements. The new cars are being made by the Birmingham Railway Carriage and Wagon Co.

Welding Abstracts

The International Institute of Welding, which was founded last year is to publish a quarterly "Bibliographical Bulletin for Welding and Allied Processes." Its preparation and printing in English and French have been undertaken by the French Institute of Welding. The annual subscription is £2 5s, reduced to £1 6s 6d for members of the member societies. Orders should be sent to the secretary, Institute of Welding, 2, Buckingham Palace Gardens, S.W.1.

Large Electric Clock

In the accompanying picture we show a Ferranti synchronous electric clock recently supplied to the British Electricity Authority, North Eastern Division, for installation at the Dunston "B" power station extensions. It has twin dials 4ft in diameter.



Ferranti synchronous electric clock for Dunston "B" power station

Industrial Supervisors

From the Institute of Industrial Supervisors, Bank Chambers, 47, Temple Row, Birmingham, 2, we have received a copy of the Institute's new journal, "The Supervisor." It is a four-page publication containing a reproduction of a speech by Sir Percy Mills (president) on the human factor in industry and the foreman's responsibility in this respect. There are also reports of the inauguration of the first two sections of the Institute—at Birmingham and Smethwick—and notices of forthcoming meetings. A section is being formed at Cardiff.

Generating Plant for Johannesburg

The Johannesburg Electricity Department is extending the Orlando power station so that its generating capacity will be almost doubled. As main contractors for generators, condensing plant, and feed heating equipment, the General Electric Co., Ltd., is to supply five 30,000 kW, 10.5 kV, 3,000 r.p.m. turbo-alternators, the value of the contract being well over £1,250,000. Three 37,500 kW G.E.C. sets are already in service in this power station, and two similar sets are under construction. When the new extensions are completed, the station will have a total generating capacity of 337,500 kW.

Leicester Exhibition

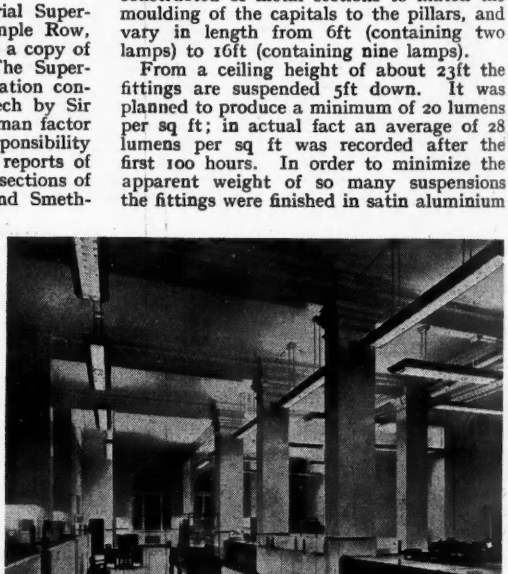
A Leicester and Leicestershire Industries Exhibition and Trade Fair is to be held at the Granby Hall, Leicester, from 19th to 28th May next. Among the electrical exhibitors will be the Electrical Equipment Co. (Leicester), Ltd., the Midland Dynamo Co., Ltd., Communication Systems, Ltd., Automatic Telephone & Electric Co., Ltd., the Western Engineering Co., and W. H. Smith & Co.

Fluorescent Office Lighting

An interesting fluorescent lighting installation has recently been completed in the concourse and offices of the Canadian Pacific Railway Co., Ltd., in the Royal Liver Building, Liverpool. It comprises ninety-two fluorescent fittings specially designed by the British Thomson-Houston Co., Ltd. These house in all 360 80 W "Mazda" "daylight" lamps and cover a superficial area of more than 18,000 sq ft. A feature of the installation is the special pendant louvred fittings used in the main hall. They are constructed of metal sections to match the moulding of the capitals to the pillars, and vary in length from 6ft (containing two lamps) to 16ft (containing nine lamps).

From a ceiling height of about 23ft the fittings are suspended 5ft down. It was planned to produce a minimum of 20 lumens per sq ft; in actual fact an average of 28 lumens per sq ft was recorded after the first 100 hours. In order to minimize the apparent weight of so many suspensions the fittings were finished in satin aluminium and, wherever possible, hung along existing architectural lines from the underside of ceiling beams and between pillars.

In addition to the main hall a number of smaller offices and private rooms have been fitted, and "wall pelmet" fittings installed in the small alcoves off the concourse.



General view of the Canadian Pacific Railway offices, Liverpool, showing the new lighting

The contractors responsible for the installation were Troughton & Young, Ltd.

Accommodation at Torquay

Mr. J. W. Simpson, secretary of the British Electrical Power Convention, tells us that he has still several double rooms available at Torquay for the Convention period. He suggests that anybody who has not yet secured accommodation should write to any of the following hotels:—Ashley Court, Kistor, Regina or Vernon Court. He would like a copy of any letter sent to these.

Condenser Support for Turbo-Alternator

In an account of standardized generating plant in the United States, *Power* (12th February, 1949) gives particulars of the use of a condenser as foundation for a 30,000-kW turbo-alternator with five bleed points. The condenser is of the cross-flow single-pass type with tubes that are longer than normal (giving the water flow characteristics of two-pass design and additional space for steam distribution) with integral first-stage bleed heater; low-pressure direct-contact heaters are installed between the tube banks under the turbine exhaust. The second and third heaters are arranged externally, one between the turbine and condenser and the other above the boiler-feed pumps. The high-pressure heaters are closed units with drain coolers.

The condensate is stored in the base of the condenser and the storage section of the de-aerating heaters.

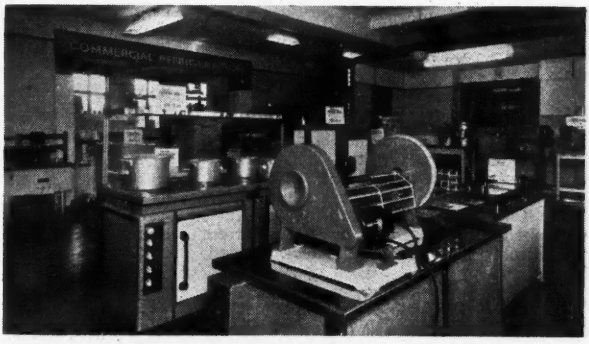
A.C. in a Destroyer

On Tuesday of this week there was launched from the Scotstoun shipyard of Yarrow & Co., Ltd., a destroyer which is larger than any now in service in the Royal Navy.

The vessel is H.M.S. *Decoy*, of 43ft beam and 390ft length overall, the hull being of all-welded construction. Main propulsion will be by general steam turbines and the electrical installation will be three phase a.c. at 440 V and 60 c/s (*Electrical Review*, 31st Dec., 1948, p. 1013), instead of the d.c. system which so far has been employed in warships of the Royal Navy. Electric cooking, a laundry and fluorescent lighting are among the ways in which living accommodation is being improved.

Yarmouth Catering Exhibition

An Hotel, Restaurant and Catering Exhibition, organized by the Eastern Electricity Board, was held from 7th to 19th March at the catering equipment centre of Electric House, Great Yarmouth. The exhibition was opened by the Mayor, Ald. F. H. Stone, who was introduced by Mr. C. N. Bancroft, district manager, Great Yarmouth, and Mr. J. A. Sumner, manager, Norfolk Sub-Area, thanked the Mayor for performing the opening ceremony. The main feature of the exhibition was a model restaurant kitchen showing equipment em-



Section of the recent Catering Exhibition at Great Yarmouth

bracing all the new features in design and application. Demonstrations included a cafeteria service counter, dry cooking, wet cooking, a still room, food preparation room, and washing-up and glass-washing machines. There were also sections devoted to commercial refrigeration, ice cream equipment and a bakery.

Ediswan Co. and Harcourts

Associated Electrical Industries has announced that from 1st April its subsidiary, the Edison Swan Electric Co., Ltd., will absorb another subsidiary, Harcourts, Ltd.

Scottish Refrigeration Exhibition

An exhibition of ice-cream and refrigeration equipment was held by the South East Scotland Electricity Board at the Electricity Service Centre, Edinburgh, from the 14th to 18th March. The exhibition was arranged in connection with the Ice Cream (Scotland) Regulations, 1948, which are shortly to come into force. The equipment on dis-

play included the latest types of pasteurizers, mixers, freezers, coolers, conservators, an "ice-fruit lolly" plant and various utensils used in the manufacture and distribution of ice-cream. The refrigeration section included a range of service cabinets, a fish cabinet, a fish and poultry cabinet, and several domestic refrigerators. Various types of water-heaters and a sterilizing chest completed a comprehensive display of equipment designed to meet the requirements of the new regulations. An unusual window display, featuring domestic refrigerators arranged on a realistic "snow-like" base with an Arctic scene in the background, attracted much attention.

Nottingham Contractors' Holiday Pay

The N.J.I.C. for the Electrical Contracting Industry has announced that Easter Tuesday has been substituted for Good Friday as a paid holiday in the Nottingham district.

Trade with Canada

The Institute of Export is arranging a luncheon at the Connaught Rooms, London, W.C.2, next Thursday, 7th April, at which the members of the recent Engineering Mission to Canada will be present. Mr. Leslie Gamage, president of the Institute, will preside. Tickets may be obtained from the Secretary, 140, Cromwell Road, London, S.W.7.

Sulphuric Acid Prices

The Board of Trade announces that the Control of Sulphuric Acid (No. 5) Order, 1949, has been made freeing from maximum price control battery or accumulator acid; reagent acid; and acid containing more than 25 per cent free SO_3, also reducing the maximum prices of all other strengths of sulphuric acid with effect from 1st April.

Philips Lamp Factory Moves

The electric lamp factory of Philips Electrical, Ltd., now at Harlesden, London, is to be moved to Hamilton, in Lanarkshire. The transfer entails the removal of all equipment and will be completed in about six months. Equipment is being moved in complete sections so as to have the minimum effect on production. While the tungsten and discharge lamp section of the company's lamp production is being transferred to Hamilton, it is also proposed to transfer fluorescent lamp manufacture from Blackburn to Hamilton so as to centralize the manufacture of Philips lamps. Some equipment is already on the way to Scotland where workers are to be trained in lamp manufacture.

Twenty-five members of the Harlesden staff, including Mr. D. Ebben, the works manager, senior technicians and production planners, are moving to Scotland. Most of the factory workers will be absorbed into a scheme to produce television components at Harlesden. The Harlesden lamp research laboratories and Blackburn quality department, under Dr. T. Holmes, are also involved in the transfer. The laboratories will be represented in nucleus as soon as production starts in Scotland, and the transfer will be complete by July.

Trade Announcements

Tilling-Stevens, Ltd., have appointed the following distributors of their electric motors: The Alliance Wholesale, Ltd., 62-63, Great Russell Street, London, W.C.1; Electrical Components, Ltd., 102, Snow Hill, Birmingham, 4; Wm. Don and Partners, Crown Point Bridge, Leeds, 9; and the Needham Engineering Co., Ltd., Townhead Street, Sheffield, 1.

Relco, Ltd., have moved to 21, Euston Square, London, N.W.1 (telephone: Euston 5282/5; telegrams: Reltricity, Norwest, London).

The telephone number of the London office of the **Simplex Electric Co., Ltd.,** is now Museum 1500.

Van Gelder & Pelger, Dutch agents for a number of British concerns, have moved to Groenendaal 23-25, Rotterdam, c.

The Birmingham Branch office of **Asea Electric, Ltd.,** has reopened at 55, Temple Row, Birmingham, 2 (telephone: Midland 5695), with Mr. J. W. Percy as manager.

Catalogues and Lists

Fitzgibbon & Murray, Ltd., The Lower Mill, Kingston Road, Ewell, Surrey.—Catalogue of lighting and bell accessories.

Simplex Electric Co., Ltd., Broadwell, Oldbury, Birmingham.—Price lists of switch and fuse gear and conduit fittings.

Enfield Cables, Ltd., Victoria House, Southampton Row, London, W.C.1.—Technical brochure illustrating the Company's grid suspension wiring system.

Knightshades, Ltd., Montagu Road, Edmonton, London, N.18.—Priced leaflet on fluorescent fittings.

W. Edwards & Co. (London), Ltd., Lower Sydenham, London, S.E.26.—Two technical leaflets on "Speedivac" vacuum pumps.

Quiz Electrics, Ltd., 160, High Street, Teddington, Middlesex.—Priced folder illustrating the "Handy-Andy" hand dryer.

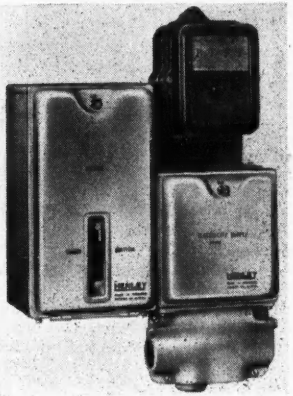
Lamberts, Ltd., 97/99, Southwark Bridge Road, London, S.E.1.—Price list (F.199) of conduit fittings, ironclad accessories, cables and flexibles, etc.

RECENT INTRODUCTIONS

NOTES ON NEW ELECTRICAL AND ALLIED PRODUCTS

Consumer's Control Unit

A TWO-PART consumer's control unit in which the main switch and the circuit fuses are housed in one case is introduced by W. T. HENLEY'S TELEGRAPH WORKS CO., LTD., 51-53, Hatton Garden, London, E.C.1. The dimensions are the same as those of the 6- or 8-way circuit fuse unit which has been on the market for the past few years. Two arrangements of fuse-ways are available, one comprising four 30 A and two 5 A fuses, and the other one 30 A, three 15 A and two 5 A fuses. In each case two spare cartridge fuse-links of each size are provided, which are accommodated in retaining clips.



Henley consumer's control unit

"Enox" double-ended hole cutters

Hole Cutters

The well-known "Enox" hole cutters made by FRY'S (LONDON), LTD., 56, Southwark Street, London, S.E.1, are now available in double-ended form, thereby reducing the weight of tool kits. At present two sizes are available which will cut clearing holes for ⅝in, ¾in, 1in and 1¼in conduits.

Electric Fountains

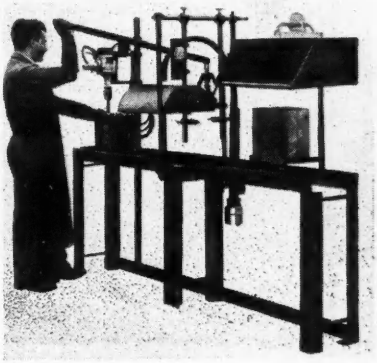
Electrically operated fountains made by STOKES APPLIANCES, LTD., 16, Dingwall Road Croydon, are electromagnetic in principle, have no moving parts to wear and require no attention. Both indoor and garden models are available, the former throwing a jet up to about 3ft and the latter from 18in to 20ft. The indoor model, which has a loading of only 3 W, is supplied in either tinted or clear "Perspex." A stand is now available for converting the outdoor model for use in an aquarium.

Stokes electromagnetic fountain

Battery Servicing Bench

A repair bench which is practically a complete workshop for the dismantling, repairing and rebuilding of motor car batteries is introduced by GORDON EQUIPMENTS, LTD., 161, Queens Road, Buckhurst Hill, Essex. This "Durite" bench is a compact prefabricated steel structure incorporating two steel angle irons, along which the batteries are passed on trolleys. Starting from the left, the battery passes under an electric drill for the removal of the connector bars. The trolley is then slid under the electrically controlled steam heater, and the sealing compound is softened. A further move to the right brings into operation the group puller, which holds the battery down as the groups are removed. For reassembling, the battery passes under the burning hood

"Durite" battery servicing bench



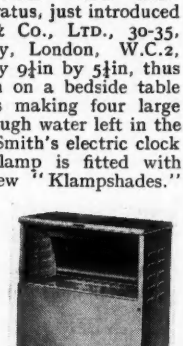
which, while affording an uninterrupted view of the work, protects the worker by removing fumes with an electric fan.

Tea-making Apparatus

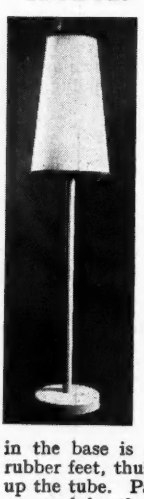
The post-war model of the "Tecal" automatic tea-making apparatus, just introduced by L. G. HAWKINS & CO., LTD., 30-35, Drury Lane, Kingsway, London, W.C.2, occupies a space of only 9¼in by 5¼in, thus leaving plenty of room on a bedside table for crockery. Besides making four large cups of tea there is enough water left in the kettle for shaving. A Smith's electric clock is provided and the lamp is fitted with one of the versatile new "Klampshades." The price is £10 18s 9d, including purchase tax.

Convector Cabinet

A cabinet designed for converting ordinary electric fires into convector heaters is being made by the WEDNESBURY PLATING CO., LTD., Holyhead Road, Wednesbury, Staffs. An existing fire is merely fixed into the interior of the cabinet and it operates on the normal convector principle. This "Gard-E-Fire" is 30in high, 20.5in wide and 11.5in deep and is rigidly constructed of pressed steel finished in cream or green crinkled enamel. The price of the appliance, which is not liable to purchase tax, is £3 8s.



"Gard-E-Fire" convector cabinet



Fluorescent Standard Lamp

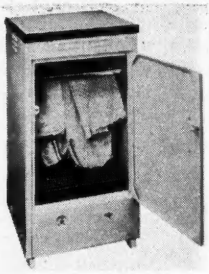
A standard lamp introduced by the LEIGH ELECTRIC CO., LTD., Lower Quay, Fareham, Hants, incorporates two or three 2ft 40 W fluorescent lamps according to model. Access to the control gear housed in the base is reached by unscrewing the rubber feet, thus enabling the cover to slide up the tube. Pastel shades of matt lacquer are used for the metal tube and base while the "Perspex" or "Crinothene" shades are available in pink, peach, green and opal with contrasting trim colour.

Leigh fluorescent standard lamp

The company has also developed a range of ceiling units accommodating one or more 5ft 80 W fluorescent tubes.

Drying Cabinets

Two new electric drying cabinets are announced by H. FISHER (OLDHAM), LTD., Glodwick Road, Oldham. One, comprising an attractive enamelled metal cabinet 21in by 42in by 36in, will dry a full wash indoors in about half an hour, or, alternatively, will air clothes or provide hot towels. It can also be used to heat or cool a room. An ironing board pulls out from under the table top and two drawers accommodate the electric iron and ironing board pad when not in use. The cabinet is mounted on concealed castors.

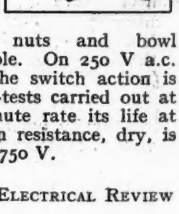


Fisher napkin dryer

The other model is designed specially for drying babies' napkins. It is 21in square by 36in high with a door in the front and a hinged enamelled top. The interior is fitted with racks. A pilot lamp shows when the 1-kW element is in operation. When not in use the apparatus serves as a table.

Toggle Switch

The "S.258" single-pole toggle switch brought out by A. F. BULGIN & CO., LTD., By-Pass Road, Barking, to replace its pre-war model "S.80" has an entirely new type of terminal, readily accepting even large conductors and clamping them securely with a captive nut. This avoids tapping of threads into the contact extension. The switch fits a $\frac{13}{32}$in hole. For panels over $\frac{3}{8}$in thick special sunken-front nuts and bowl escutcheons are available. On 250 V a.c. the rating is 3 A. The switch action is fully q.m.b., and type-tests carried out at 15-16 operations a minute rate its life at over 25,000. Insulation resistance, dry, is guaranteed as 40MΩ at 750 V.



Bulgin "S258" toggle switch

FINANCIAL SECTION

Company News
Stock Exchange Activities

Reports and Dividends

Switchgear & Cowans, Ltd., report a trading profit for 1948 of £88,579, as compared with £71,289 for 1947, and a net profit of £58,629 (against £52,153). Taxation requires £41,239, and after adding £29,755, the balance available is £47,145. The dividend for the year is maintained at 20 per cent, the pension fund receives £1,000, and £32,945 is carried forward.

International Combustion, Ltd., in a preliminary statement, shows a net profit for the year ended 30th September last, before taxation, of £454,419, as compared with £260,023 for the preceding year. The final ordinary dividend is 27½ per cent, again making 37½ per cent, less tax for the year, and £95,486 is carried forward.

Enfield Rolling Mills, Ltd., reports a trading profit of £503,716 for 1948, as compared with £727,169 for the preceding year, and a net profit of £166,380 (against £139,640). General reserve receives £100,000, the dividend for the year is maintained at 5 per cent, less tax, and the bonus of 2½ per cent, less tax, is also repeated. The balance carried forward is £97,857.

The Ransome & Marles Bearing Co., Ltd., proposes to make an issue of 400,000 5s shares in the form of rights to stockholders The present authorized capital is £700,000 in £1 stock. The directors propose to convert the capital to un-numbered shares in 5s denomination. At an extraordinary meeting to be held on 21st April resolutions will be submitted authorizing an increase in the capital to £1,000,000 by the creation of 1,200,000 5s shares. The directors state that up to now the company has financed everything out of its own resources, but with the present taxation demands and increases in labour and material costs, it can no longer do so. A total of £259,000 was spent up to 30th June, 1948, on land, buildings and plant, and further capital commitments at that date amounted to £60,000. More capital expenditure is required to increase output.

Hilger & Watts, Ltd.—The first report of this company, which was incorporated in February, 1948, shows a trading profit for the periods ended 30th September last of £107,733 (Adam Hilger for period 1st October, 1947, to 19th February, 1948, E. R. Watts & Son, 1st January to 19th February, 1948, Hilger & Watts, 20th February to 30th September, 1948, and the subsidiary company for six months ended 30th September last). After making various deductions, there is a net profit for the seven months ended 30th September of £14,794. The ordinary dividend is at the rate of 6 per cent per annum, a profit of £590 is retained in the subsidiary, and the balance carried forward is £6,865.

A. C. Cossor, Ltd., has announced that the trading results for the year ended 31st March, will be such that it will not be possible to recommend the payment of a dividend on the 6 per cent preference shares.

The Nigerian Electricity Supply Corporation, Ltd., is again paying an interim dividend of 4 per cent.

C.E.B. Stock Conversion

An Order has been made naming 1st April as the date for the conversion of the Central Electricity Board 3½ per cent 1963-93 stock into British Electricity stock. Compensation will be at the rate of £113 British Electricity stock per £100 nominal C.E.B. stock.

New Companies

Electric Construction Co. (Small Motors), Ltd.—Registered 19th March. Private company. Capital £25,000. Electrical and mechanical engineers, manufacturers of and dealers in machinery, etc. Directors: W. B. Furniss, W. M. B. Furniss and W. Tonkinson. Solicitors: Parker, Garrett & Co., St. Michael's Rectory, E.C.3.

William Fuller & Co. (Electrician), Ltd.—Registered 18th March. Capital £3,000. To acquire the business of an electrical contractor and engineer carried on by W. Fuller at Windsor. Directors: W. Fuller (permanent) and Alice Fuller. Regd. office: 45, Windsor Street, Windsor.

Fittings Maintenance Co., Ltd.—Registered 19th March. Capital £3,000. Electrical and mechanical engineers and contractors, radio and television engineers, &c. Directors: J. H. Gaskell and H. B. Gaskell. Regd. office: 103, Narborough Road, Leicester.

British Fan and Electric Co., Ltd.—Registered 23rd March. Capital £10,000. Directors: R. T. Yeates and L. J. Lawrence. Regd. office: Park Street, Thame, Oxford.

D. H. Bonnella & Son, Ltd.—Registered 19th March. Capital £10,000. To acquire the business and undertaking of B.H.D. (Light Industries), Ltd., formerly D. H. Bonnella & Son, Ltd., and to carry on the

business of manufacturers of and dealers in electrical, gas, wireless, television, telephone components, etc. Directors: D. C. Baker and A. J. Bonnella. Regd. office: 46-48, Osnaburgh Street, W.C.1.

Audio Television, Ltd.—Registered in Edinburgh, 15th March. Capital £500. Manufacturers and repairers of, and dealers in, wireless and television receiving and transmitting sets, etc. Directors: L. E. H. Scott and C. J. H. Mellan. Regd. office: 1,288, Argyle Street, Glasgow.

Ezee Appliances (Kingsbury), Ltd.—Registered 17th March. Capital £1,000. Manufacturers of and dealers in, and agents for manufacturers of, domestic, household and general electrical and other equipment and appliances, etc. Directors: R. J. Tombling, Mrs. H. M. Tombling, J. N. Vickars and Mrs. W. J. Vickars. Regd. office: 8, Uphill Parade, Kingsbury, N.W.9.

Whetstone Luminations, Ltd.—Registered 17th March. Capital £1,000. Manufacturers of hot and cold cathode luminous tubes and signs of all kinds, electrical contractors and engineers, etc. Directors: H. O. Dickinson and A. Johnson. Regd. office: 6-8, College Street South, Liverpool, 6.

Winding-up Petition Dismissed

In the Companies Winding Up Court on 28th March Mr. Justice Roxburgh had before him a petition for the compulsory winding up of B.E.C. (British Electrical Corporation), **Ltd.**

Counsel said there was a creditors' petition for £1,850. An order had been made, but it had been rescinded. The matter had now been settled and he asked his Lordship to dismiss the petition. The petition was dismissed.

Bankruptcies

M. McK. Colgan, residing at 324, Bury New Road, Salford, 7, and lately carrying on business at 39, Bunyan Street, Ardwick, Manchester, electrical contractor.—Receiving order made 18th March on a creditor's petition.

L. A. R. Batchelor, 25, Eversley Road, St. Leonards-on-Sea, trading as Kenex Distributors at 139, Bohemia Road, St. Leonards-on-Sea, electrical and radio equipment wholesalers, formerly 3, Mercatoria, St. Leonards-on-Sea, and 72, High Street, Hastings.—First meeting 1st April at the Official Receiver's office, 8, Old Steine, Brighton. Public examination 26th April at the Town Hall, Hastings.

F. Robinson, residing at 46, Glovers Road, Small Heath, Birmingham, and lately carrying on business at 100, Henshaw Road, Small Heath, Birmingham, as refrigerating and electrical engineer.—First meeting 1st April at the Official Receiver's office, Somerset House, 37, Temple Street, Birmingham, 2. Public examination 5th May, at the Court House, Corporation Street, Birmingham, 4.

C. H. F. Thick, 1, Nuns' Walk, Winchester, and lately carrying on business at the same address with S. W. West, under the name of West & Thick, as electrical engineers.—Application for discharge to be heard on 4th May at The Castle, Winchester.

C. A. Jay, Dale House, Dipton, Durham, and carrying on business as electronic instrument maker under the name of A. G. Jay & Co., at 32, Clayton Street West, Newcastle-on-Tyne.—Trustee, A. K. Ferguson, Gibb Chambers, Westgate Road, Newcastle-on-Tyne, Official Receiver, released 17th March, 1949.

C. Davis and **R. Walster,** carrying on business in co-partnership as Davis & Walster, at 198, Hessle Road, Hull, electrical engineers and contractors.—Last day for receiving proofs for dividend, 8th April. Trustee, Mr. H. S. Bloomer, 8, Flottergate, Great Grimsby, Official Receiver.

N. H. Green, 66, London Road, Coalville, Leics, electrician.—Receiving order made 19th March on debtor's own petition.

Standard Specifications

THE object of issuing a schedule of projector lamps (B.S. 1522, price 2s.) has been substantially to reduce the large number of different types previously existing.

One quality only of electrically welded mild steel chain (short link and pitched or calibration) for lifting purposes is now provided for in the revised B.S. 590 (price 2s. 6d.) which has been amended in several respects.

More uniformity in naming switch plates and similar accessories finished by metal colouring should follow the appearance of B.S. 1448 (price 2s. 6d.) which should relieve the purchaser of the necessity for submitting samples for matching.

Terms used in process control are defined in Section 2 (B.S. 1523, price 2s. 6d.) of a comprehensive glossary that is planned of which Section 3 (now in preparation) will deal with the nomenclature of position control servo-mechanisms while Section 4 will deal with automatic regulators. The last to be prepared will be Section 1, to contain those terms common to all automatic systems of the closed loop type, which continuously compare actual and desired values.

These documents are obtainable from the British Standards Institution, 24, Victoria Street, London, S.W.1.

STOCKS and SHARES

THE Budget is now firmly established as the main factor in Stock Exchange markets. As is the case with so many of the shops, the public are refraining from purchases of Stock Exchange securities pending the speech of the Chancellor: they wait to hear whether or not there are to be alleviations in the purchase tax, income tax or other burdens. So far as can be gathered from personal observation, the Stock Exchange impression is that there may be a reduction in the purchase tax; possibly a slight relaxation in the income tax to be compensated for, perhaps, by additional imposts in other directions. In circumstances of such uncertainty, it is not surprising that business should remain meagre and spasmodic.

Effects of the Slump

The inactivity is redeemed to some extent by the success which has attended a number of the recent new issues, and the business that has followed therefrom. It is known that dozens, if not scores, of other applicants for financial support from the public are only waiting round the corner, so to speak. Nevertheless, in spite of the competition from newcomers, present and prospective, quotations are reasonably well maintained after the partial rally which followed the slump of three weeks ago, a slump which has left a severe mark upon the prices of stocks and shares quoted here monthly. Reference to the current list will show how very few are the improvements as compared with the long lists of falls that have occurred in practically every section of the market.

Company News

In view of the warning issued by A. C. Cossor last September, the market was partly prepared for the announcement that no dividend is to be paid this time on the half-million 6 per cent cumulative preference shares. Confirmation of the fact was, however, followed by a further marking down of the shares concerned to 15s, the ordinary also dropping back to 7s. Switchgear & Cowans have duly maintained the dividend at 20 per cent; the new shares do not rank for this payment. Profits, before tax, exhibit a modest rise on the previous year's.

International Combustion show notably good preliminary figures, profits having improved by as much as 75 per cent. The 1s shares of A. F. Bulgin stand at 2s 9d to yield 10 per cent on the 27½ per cent dividend. Great Northern Telegraphs at 12½ are £7 down on the month. From the previously paid 12 per cent, the dividend has been reduced to 7 per cent, and this is achieved only by aid of the reserves.

Electrical Equipment

Although further depredations spoil the look of the monthly price lists accompanying these notes, the fact remains that depreciation has again been least in those sections of the industrial market connected with electrical engineering and other capital industries in the "high priority" class. Electrical equipment shares have retreated, nevertheless, to a mark at which, as the lists show, yields of less than 4 per cent have disappeared from the scene. General Electrics and Associated Electrical Industries were among the last to cross that line. The Board of Trade's announcement during the month that the Monopolies Commission is to investigate conditions in, amongst others, the electric lamp and cable industries, has been obscured as a market factor by surrounding events.

Lower Prices: Higher Yields

It will be noticed by reference to the price lists overleaf that some of the heaviest falls on the month took place in the shares of front rank companies such, for instance, as Tube Investments, Revo, Mather & Platt, Lucas, Johnson & Phillips, Henley's, Westinghouse Brake, to mention a few taken from various groups. The natural tendency for a Stock Exchange mind in contemplating these falls is to regard them as being depressingly unfavourable and as contrary to general interest. It may, however, be urged that there is something to be said on the other side, and that, for the fortunate folk who have money to invest at the present time, the all-round decline in prices offers an opportunity such as has not occurred for a long time to take a hand in buying shares that will give a living rate of return, coupled with first-rate security.

Debenture Stocks

Overwhelming subscriptions to new issues of sound industrial debenture and preference stocks show the extent of the demand which still remains unsatisfied in this class of security. Practically every market reports a shortage of stock, and prices seem inoculated against the weakness afflicting equities. Electrical markets can offer little to relieve the dearth of debentures, although Ericsson 3½ per cents occasionally come on offer at about 104, to yield £3 7s 6d per cent. They are redeemable at 101 between 1965 and 1975. English Electric 4 per cent debentures are sometimes available at a point higher, and British Aluminium 3 per cents are in relatively free supply at 99. These latter are repayable 1952/88 at prices declining from 102½ at the earliest, to 100 at the latest dates.

Electrical Investments

Past Month's Price Changes

Company	Dividend Previous	Dividend Last	Middle Price 26th Mar 1949	Month's Rise or Fall	Yield £ s. d.
Overseas Electricity Companies					
Atlas Elec.... ...	Nil	2	12/9	−1/3	3 2 9
Calcutta Elec. ...	6†	6†	28/–	−3/–	4 5 9
Cawnpore Elec. ...	13	13	23/9	−1/3	7 14 0
East African Power	7	7	38/3	−5 6	3 13 4
Jerusalem Elec. ...	5	6	21/–	−2/–	—
Madras Elec. ...	8	5	27/–	−2/6	3 14 1
Nigerian Elec. ...	12½	10	31/3	−4/3	6 8 0
Palestine Elec. "A"	7†	Nil	31/3	−3/3	—
Perak Hydro-elec	Nil	Nil	11/–	−2/–	—
Whitehall Inv. Pref.	—	6	25/–	−1/–	4 16 0
Equipment and Manufacturing					
Aberdare Cable ...	10	15	57/6	−5 6	5 4 2
Aron Elec. Ord. ...	15	15	45/–	−3/9	6 13 4
Assoc. Elec. Ord. ...	15	15	75/–	−2/6	4 0 0
Automatic Tel. & El.	12½	12½	62/–	−3/–	4 0 8
Babcock & Wilcox	15	15	66 6	−7/6	4 10 4
Baldwin, H. J. (2/–)	25	25	8/6	−3 1.	5 17 8
British Aluminium	10	10	47/–	−3/9	4 5 6
B.I. Callender's ...	6¾	6¾	32/–	−1/–	4 3 4
British Thermostat (5/–)	23½	23½	27/6	...	4 5 6
British Vac. Cleaner (5/–)	20	20	11/–	−1/–	9 1 10
Brush Ord. (5/–) ...	—	10	6/9	−6d.	7 9 3
Burco (5/–) ...	35	35	21/3	−1/3	8 5 2
Chloride El. Storage	20	20	95/–	−5/–	4 4 2
Cole, E. K. (5/–) ...	20	22½	14/–	−3/–	—
Cossor, A. C. (5/–)	Nil	Nil	7/–	−2/6	—
Crabtree (10/–) ...	17½	17½	37/6	−3/6	4 13 4
Crompton Parkinson Ord. (5/–) ...	22½	22½	24/6	−1/6	4 12 0
De La Rue (5/–) ...	50	50	24/6	−3/9	7 5 0
Decca (1/–) ...	112½	112½	17/–	−4/–	6 12 4
E.M.I. (10/–) ...		8	18/–	−3d.	4 9 0
Electrical Components (5/–) ...	20	20	10/9	−1/9	0 0 0 9 6 0
Elec. Construction	12½	12½	52 6	−2/6	4 15 3
Enfield Cable Ord.	7½	7½	35/–	−1/–	4 5 9
English Electric ...	10	10	45/–	−2/6	4 9 0
Ericsson Tel. (5/–)	20†	20†	42/–	−1/9	2 7 8
Ever Ready (5/–)	40	40	36/6	−2/–	5 9 7
Falk Stadelmann ...	10	15	45/–	−1/3	6 13 4
G.E.C. Ord. ...	17½	17½	86/6	−3,0	4 1 0
General Cables (5/–)	50	50	35/–	−½	7 2 10
Greenwood & Batley	15	15	53/3	+9d.	5 12 9
Hackbridge Cable (5/–)	—	20(est.)	14/9	−9d.	—
Hackbridge Hewittic (5/–)	6	12	11/3	−6d.	5 6 8
Hall's Tel.Acc.(10/–)	10	10	12/–	−1/3	8 6 8
Heatrae (2/–) ...	12½	12½	5/–	...	5 0 0
Henley's (5/–) ...	20	20	23/6	−2/–	4 5 1
Hoover (5/–) ...	40	40	33/9	−3/9	5 18 4
Intl. Combustion (5/–)	37½	37½	42/6	−2/6	4 8 4
Johnson & Phillips	15	15	72/–	−1/6	4 8 4

Company	Dividend Previous	Dividend Last	Middle Price 26th Mar 1949	Month's Rise or Fall	Yield £ s. d.
Equipment and Manufacturing (Continued)					
Lancashire Dynamo	22½	22½	5½	−3/9	4 5 9
Laurence, Scott (5/–)	12½	12½	13/9	−1/3	4 11 0
London Elec. Wire	10	10	45/–	−3/9	4 5 9
J. Lucas	17½	17½	85/–	−5/–	4 2 4
Mather & Platt ...	11	11	49/6	−4/3	4 8 9
Metal Industries (B)	10	10	43/6	−3/6	4 12 0
Mid. Elec. Mfg. ...	35	35	8½	...	4 5 0
Murex	20	20	90/–	−7/6	4 9 0
Newman Ind. (2/–)	22½	22½	5/6	−9d.	8 3 6
Oldham & Son (1/–)	60	60	10/–	−9d.	6 0 0
Plessey (5/–) ...	30	20	17/3	−1/3	5 16 9
Parsons C. A. ...	12½	12½	63/3	+½	3 19 1
Pye Deferred (5/–)	25	25	27/6	−5/–	4 11 0
Radio & Tel. (2/–)	40	25	5/–	−1/–	10 0 0
Revo (10/–) ...	27½	27½	55/–	−3/3	5 0 0
Reyrolle	12½	12½	60/0	−1/3	4 3 4
Scophony (5/–) ...	—	—	3/–	−6d.	—
Scot. Cable (4/–) ...	30	30	25/–	−3d.	4 16 0
Siemens Ord. ...	7½	7½	35/–	−1/–	4 5 9
Switchgear & Cowans (5/–)	20	20	15/–	−1/6	6 13 4
T.C.C. (10/–) ...	15	15	32/6	...	4 12 4
T.C. & M.	10	10	48/3	−4/3	4 6 9
Telephone Mfg. (5/–)	9	9	10/–	−6d.	4 10 0
Thorn Elec. (5/–) ...	25	25	18/9	−1/3	6 8 10
Tube Investments	25	25	6⅞	−6/3	4 1 2
Vactric (5/–) ...	Nil	Nil	18/9	+2/6	—
Verity's (5/–) ...	2½	5	4/3	−6d.	5 17 8
Walsall Conduits (4/–)	70	70	58/9	−2/–	4 15 3
Ward & Goldstone (5/–)	50	50	59/6	+1/–	4 3 0
Watford (2/–) ...	15	15	6/–	+3d.	5 0 0
Westinghouse Brake	14	14	66/3	−3/9	4 4 6
West, Allen (5/–)	10	10	10/6	−6d.	4 15 3
Transport and Communications					
Anglo-Am. Tel.: Pref.	6	5⅝	109½	−11	—
Def.	1½	1½*	14½	−1½	—
Anglo-Portuguese	8	8	30/–	+6d.	5 6
Brit. Elec. Traction: Def. Ord. ...	50	50	1835	−70	2 14 4
Calcutta Trams ...	10	Nil	24 6	−4/6	—
Cape Elec. Trams	6	6	22/6	−2/6	5 6 8
Cable & Wireless: 5½ Pref. ...	5½	5½	116	−9½	4 14 10
Ord.	4	4	230	−10½	—
Globe Tel. & Tel.Ord.	5†	5†	44/–	−4/–	2 5 6
Great Northern Tel. (£10)	12	7	12½	−7	5 12 0
Inter. Tel. & Tel....	Nil	Nil	15	+1	—
Marconi Marine ...	7½	7½	29/6	−1/6	5 1 8
Oriental Tel. Ord....	10	16	50/–	−1/3	6 8 0
Telephone Props ...	6	6	15/–	−2/6	8 0 0
Tele. Rentals (5/–)	10	10	10/6	−3d.	4 15 3

*Dividend postponed.

†Dividends are paid free of Income Tax.

Lancashire Dynamo Jubilee

REVIEW OF GROUP'S DEVELOPMENT

THE Lancashire Dynamo & Crypto, Ltd., group of companies is celebrating its fiftieth anniversary this year, and to mark the occasion a festival was held on 24th March, which included a dance and general entertainment for employees at the Lyceum Theatre, London. A similar function for the Trafford Park Works is being held on 28th April at the Ritz Dance Hall, Manchester.

The Lancashire Dynamo & Motor Co. was formed in 1899 by Mr. A. P. Wood. The manufacture of d.c. motors was commenced at Pendleton while works were being erected at Trafford Park. About the same time the Crypto Electrical Co., Ltd., in London, commenced manufacture of low-powered electric motors and other equipment under the guidance of the brothers Messrs. J. G. and C. R. Shaw. Mr. J. G. Shaw is now vice-chairman of L.D.C., Ltd.

Early Activities

In 1901, the first alternator was made and a gold medal was awarded at the Glasgow Exhibition for a 40-pole machine which ran at 150 r.p.m. The company also proceeded with the manufacture of pipe-ventilated machines and in 1908 produced the first synchronous motor ever built in this country. The first turbo-alternator was built in 1910 and in the following year the Lancashire Dynamo Co. of Canada, Ltd., was launched. A trading association was established between the Lancashire and London companies in 1919, and they were subsequently amalgamated in 1932 under the present title of Lancashire Dynamo & Crypto, Ltd., the Canadian company being re-formed under the name of Bepco (Canada), Ltd., incorporating the interests in that Dominion of the old L.D.M. Canadian Co. and those of Bruce Peebles, Harland Engineering Co., and Crompton Parkinson, Ltd.

The new enterprises expanded rapidly and a speciality machine section was established in the Willesden works for the production and distribution of electrically driven food preparing machinery and other catering equipment, culminating in the formation of the subsidiary company Crypto, Ltd. The 1930s marked the establishment of the group of companies under the wing of the parent organization, which now includes Crypton Equipment, Ltd., and Foster Transformers & Switchgear, Ltd., with its subsidiary Foster Electrical Supplies, Ltd. During this period, also, were developed totally enclosed and dust-proof motors and motors with flameproof enclosures for the mining, petroleum and gas industries.

In common with other companies in the industry, the group devoted its efforts during the war to the requirements of war production, and manufactured products not normally made in its factories. It was during the war that an association was established with the Nevelin Electric Co., Ltd., of Croydon. In 1947 premises were acquired at Cardiff for the production of fractional h.p. motors, and more recently, in view of the importance of the South African market, a sales and service company with the title of Lancashire Dynamo & Crypto South Africa (Pty.), Ltd., has been formed.

At last week's London function some hundreds of employees with their wives and friends packed the Lyceum Theatre, and those responsible for its organization had done all possible to make the event a festival. The directorate were there in full force, headed by Mr. H. W. Bosworth, the chairman (accompanied by Mrs. Bosworth), and after an official reception of long-service employees, the chairman in an address of welcome, spoke of the group's expanding export trade. He referred to the high standard of workmanship of their products and the importance of maintaining it, especially in the export market. The formalities having been disposed of, the remainder of the evening was given over to dancing, interspersed with an excellent cabaret.

Mond Nickel Fellowships

THE Mond Nickel Fellowships Committee invites applications for the award of fellowships for 1949. Awards will be made to selected applicants of British nationality educated to university degree or similar standard, though not necessarily qualified in metallurgy, who wish to undergo a programme of training in industrial establishments; they will normally take the form of travelling fellowships: awards for training at universities may be made in special circumstances. There are no age limits though awards will seldom be given to persons over thirty-five years of age. Each fellowship will seldom occupy one full working year. The Committee hopes to award up to five fellowships each year of an average value of £750 each. Particulars and forms of application can be obtained from the Secretary, Mond Nickel Fellowships Committee, 4, Grosvenor Gardens, London, S.W.1.

Next Week's Events

Monday, 4th April

BIRMINGHAM.—James Watt Memorial Institute, 6 p.m. I.E.E. South Midland Centre. "Load Dispatching and the Reasons for it, with special reference to the British Grid System," by A. R. Cooper.

LEEDS.—Great Northern Hotel, 7.0 p.m. A.S.E.E. Leeds Branch. "Electric Lifts," by C. Rhodes.

LIVERPOOL. — Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. Annual general meeting.

LONDON.—Savoy Place, W.C.2, 7 p.m. I.E.E. London Students' Section. Address by the president, Mr. T. G. N. Haldane, on "Future Methods of Power Generation and Other Problems."

NEWCASTLE-ON-TYNE.—Royal Station Hotel, 6.15 p.m. I.E.E. North-Eastern Centre. Annual general meeting. 7 p.m., Conversazione.

SHEFFIELD.—Royal Victoria Hotel, 7.30 p.m. A.S.E.E. Sheffield Branch. "Application of Electricity to Rolling Mills," by G. H. Beardmore.

Tuesday, 5th April

EDINBURGH.—North British Hotel, 12.30 for 1 p.m. I.E.E. Scottish Centre. Luncheon. Central Hall, Tollcross, 7 p.m. Faraday Lecture on "Television," by Sir Noel Ashbridge and H. Bishop.

GLASGOW.—Electrical Society of Glasgow. Annual general meeting.

LEEDS.—Yorkshire Electricity Board Offices, 6.30 p.m. I.E.E. North Midland Centre. "Some Projects Favourable to Direct-Current Transmission, and the Role of the British Electrical Industry in Relation thereto," by F. J. Erroll and Lord Forrester

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Measurements Section. "Parasitic Forces Existing in Induction Watthour Meters," by G. F. Shotter.

35, Grosvenor Place, London, S.W.1, 6.15 p.m. E.A.W. Business and Professional Women's Circle. "Electricity and Growing," by C. A. Cameron Brown.

MANCHESTER.—Engineers' Club, Albert Square, 6.15 p.m. I.E.E. North-Western Centre. "Visual Methods in Engineering Teaching," by H. E. Dance.

RUGBY.—Electricity Showrooms, 6.30 p.m. I.E.E. Rugby Sub-Centre. "The Application of Electricity to Horticulture," by C. A. Cameron Brown and E. W. Golding.

Wednesday, 6th April

HAMMERSMITH. — Town Hall, 7.30 p.m. A.S.E.E. West London Branch. Lantern lecture, "A Night with London Transport."

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Radio Section. "Hot-Cathode Thyratrons: Practical Studies of Characteristics," by H. de B. Knight.

I.E.E. London Students' Section, 2.15 p.m. Visit to Klinger Manufacturing Co., Ltd., Edmonton, N.8.

At the Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Institution of Heating and Ventilating Engineers, 1948 Napier Shaw Premium Paper, by Dr. T. Bedford.

MIDDLESBROUGH. — Cleveland Scientific and Technical Institute, 6.30. I.E.E. Tees-side Sub-Centre. Annual general meeting. "Some Projects Favourable to Direct-Current Transmission, and the Role of the British Electrical Industry in Relation thereto," by F. J. Erroll and Lord Forrester.

ROMFORD.—Mawney's Arms, 8 p.m. A.S.E.E. North-East London Branch. "Television."

SOUTHAMPTON.—University College, 6.30 p.m. I.E.E. Southern Centre. "Waterworks Power Plant Practice: the Comparative Costs of Steam-, Diesel- and Electrically-Operated Machinery," by T. P. Wakeford.

STONE.—Duncan Hall, 7 p.m. Joint meeting of the I.E.E. North Staffordshire Sub-Centre and the Institution of Post Office Electrical Engineers. "Scientific Work of the Post Office," by Dr. L. E. Ryall.

Thursday, 7th April

CARDIFF.—South Wales Institute of Engineers, Park Place, 5.45 p.m. Illuminating Engineering Society (Cardiff Centre). "High Voltage Lighting," by C. Dykes-Brown.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Utilization Section. Short papers by younger members.

At the Institute of Marine Engineers, 85-88, The Minories, E.C.3, 6.30 p.m. Institute of Welding (South London Branch). Annual general meeting and speaker on developments in the U.S.A.

SWANSEA.—Plaza Cinema. Joint meeting of the I.E.E. Western Utilization Group and the West Wales (Swansea) Sub-Centre.

TREFOREST.—School of Mines, 6 p.m. Association of Mining Electrical and Mechanical Engineers (South Wales Branch). "The Technical Training of Mining, Mechanical and Electrical Engineers," by D. M. Dummer.

Friday, 8th April

BIRMINGHAM.—Imperial Hotel, Temple Street, 6 p.m. Illuminating Engineering Society (Birmingham Centre). "Seeing Conditions in Relation to Industrial Health," by Dr. K. T. Waters.

Chamber of Commerce, New Street, 7 p.m. Television Society (Midlands Centre). "Electronic Testing Instruments," by A. E. Crawford.

BRISTOL.—Grand Hotel, 7.30 p.m. A.S.E.E. Bristol Branch. "Interior Cold Cathode Lighting," by R. S. Hazell.

LONDON.—Café Royal, W.1, 7 p.m. I.E.E. Utilization Section. Section dinner.

Royal Institution, 21, Albemarle Street, W.1, 9 p.m. "Magnetic Field of Large Rotating Bodies," by Prof. P. M. S. Blackett.

NEWCASTLE-ON-TYNE.—King's College, 7 p.m. I.E.E. North-Eastern Students' Section. "Servomechanisms," by P. H. Hammond.

Saturday, 9th April

COVENTRY.—Technical College, 2.30 p.m. I.E.E. South Midland Students' Section. "The Storage Battery," by J. W. Lawton.

Electricity Supply

Rural Development in South West : Further Plant Contracts

IT was announced by the South Western Electricity Board last week that a scheme had been drawn up for reinforcing and augmenting the primary network in the area over a period of years at an estimated cost of £2,000,000. In a statement outlining the Electricity Board's rural development policy at a meeting of the Devon District Committee of the South West Regional Board for Industry, it was explained that although the load in the area had increased substantially since 1939 the primary network had received practically no reinforcement. Consequently it was now loaded almost to capacity, which prevented any major extension of the secondary distribution network.

The number of farms supplied with electricity in the South West increased by 12 per cent during the Board's first nine months' working, compared with an increase for all domestic consumers of just over 3½ per cent. New farm connections totalled 784, against 693 for the whole of 1947. Rural development officers had been appointed for each of the Board's five Sub-Areas, and a survey of the whole area was being carried out to provide a broad appreciation of the problem as a preliminary to detailed planning. The statement concluded by pointing out that although large-scale development plans could not be put fully into effect so long as the present shortage of generating plant and key materials continued, such development as could be undertaken would be related to the main plan.

B.E.A. Contracts

During the past month contracts have been placed by the British Electricity Authority for generating station, switching and transforming station and transmission equipment amounting in the aggregate to £2,744,258. The principal contracts include: Circulating water outlet culverts and outfall, Barking "C" generating station (Sir Robert McAlpine & Sons, Ltd.); 33 kV and lower voltage auxiliary transformers, Barking "C" (Hackbridge & Hewittic Electric Co., Ltd.); two coal unloading cranes, Littlebrook "C" station (Stothert & Pitt, Ltd.); superstructures, pump chambers and railways, West Ham "B" station (Taylor Woodrow Construction, Ltd.); sub-structure for eastern half of Brighton "B" station and railway sidings, and civil engineering works, Nottingham generating station (Holloway Bros. [London], Ltd.); electrostatic precipitators for three boilers, Battersea "B" station (Sturtevant Engineering Co., Ltd.); main and house transformers, reactors and e.h.v. cables, Fulham station (Metropolitan-Vickers Electrical Co., Ltd.); construction of office block, Midlands Generating Division (Parsons and Morrin, Ltd.); railway sidings, Accrington station (Thos. Summerson & Sons, Ltd.); 3,300-V switchgear, Rye House station (B.T.H. Co., Ltd.); ash handling plant including cranes by Strachan and Henshaw, Nechells station (International Combustion, Ltd.); and 15,000 kW gas turbo-alternator set and auxiliary equipment, Trafford station (Metropolitan-Vickers Electrical Co., Ltd.).

Electricity Output

The Ministry of Fuel and Power statement for the week ended 18th March shows that 967.0 million kWh was sent out for public supply from solid fuel-fired stations, as compared with 1,011.3 million kWh in the preceding week and 829.4 million for the week ended 20th March, 1948. Stocks of coal at electricity undertakings at 19th March totalled 3,271,300 tons.

Public Lighting Tariff

Liverpool Lighting Committee is making representations to the Area Consultative Council against the new tariff of the Merseyside and North Wales Electricity Board for public lighting. This will cost the city about £9,000 per annum more. The proposal is a fixed charge of 4s a year per lighting point, irrespective of the wattage of the lamp and whether it is lighted or not, together with a running charge of 1d per kWh.

Deputation Meets Minister

The Minister of Fuel and Power last week received a deputation from Glasgow Corporation. Sir Hector McNeill, Lord Provost of Glasgow, who led the deputation, said it was desired to make representations against the increase in the secondary rates for domestic consumers in Glasgow from 0.6d and 0.4d to 0.75d per kWh, and also against the surcharge.

Mr. Gaitskell said that the B.E.A. and the Boards were under obligation to operate on a sound financial basis and it was decided to fix a minimum running charge for domestic consumers of ½d per kWh. This

involved substantial increases in places such as Glasgow where exceptionally low rates had prevailed. In applying these charges the Boards acted entirely within their legitimate discretion. He appreciated that the combined effect of the increase in price and of the winter surcharge had been to increase some consumers' bills very substantially for the winter quarter, but he was sure that the differential had helped to keep down winter demand. There could be no question of dropping the tariff differential in the middle of the year. No decision had yet been taken as to whether it would be continued next year. When the financial position became known the question of still further reducing the summer charge would be considered.

The Lord Provost expressed his disappointment at the Minister's decision not to drop the surcharge and said that the Glasgow Corporation would be greatly perturbed if no reduction were made and would continue its opposition.

Glasgow Finance Committe on 25th March recommended that the Council should seek counsel's opinion on the legality of the electricity charges in the city.

Surcharge Disliked

The North Western Electricity Consultative Council, at a meeting held at Manchester last Friday, adopted a resolution strongly recommending that the experiment of higher winter electricity charges should not be renewed next winter.

New Dublin Station

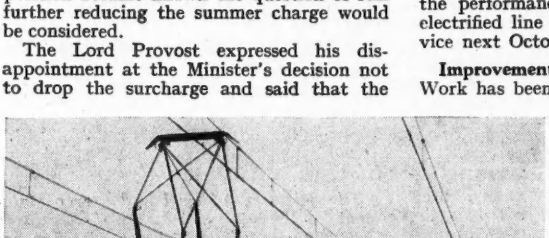
A proposal to construct a new generating station at Pigeon House Road at a cost of about £3,000,000 was referred to at a meeting of the Dublin Town Planning Committee. The town planning officer stated that there was no objection in principle to the scheme if the design was satisfactory.

A report from the city engineer, which was adopted, recommended that the land required should be offered to the E.S.B. for £4,000.

TRANSPORT

LAST week an electric train carried out the first of a series of trial runs on the line between Ilford and Chadwell Heath, and later Mr. H. H. Swift, electrical engineer, Eastern Region, expressed satisfaction with the performance. It is expected that the electrified line will be ready for public service next October.

Improvements for Festival of Britain.—Work has been started on the construction of a special three-stairway escalator, 114ft long, between Waterloo tube station and the Festival of Britain exhibition grounds. The new escalators start from near the foot of the present escalators to the main line station and will come to the surface on the Festival site itself, at the corner of Jenkins Street and the south side of York Road. A new booking-hall will be built. The new escalators will aid in the handling of tens of thousands of Festival visitors daily and will ease conditions for regular business users; they will cost about £300,000.



Electric train leaving the new depot at Ilford on a trial run.

Work is to start shortly on two new escalators at Charing Cross Underground Station, one 50ft and the other 46ft long. These will give Festival passengers entering the station a direct route from the present Charing Cross booking hall down to the escalators leading to the Northern and Bakerloo Lines. The new escalators will cost about £150,000. To make room for them the stairway on Victoria Embankment to Hungerford Bridge is to be rebuilt in a different position. To ease conditions further, there will be two new exits from Charing Cross District Line, one adjacent to the entrance of Embankment Gardens and the other at a corresponding position on the Victoria Embankment.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s. each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1944

216. Sperry Gyroscope Co., Inc.—Tuning devices for a cavity resonator electron-discharge tube. 17th October, 1942. (619667.)

3562. British Thomson-Houston Co., Ltd. (General Electric Co.).—Dynamo-electric machines. 25th February, 1944. (619485.)

12543. Marconi's Wireless Telegraph Co., Ltd.—Method and apparatus for portraying intelligence by the phenomenon of luminescence. 22nd July, 1942. (619668.)

1945

13487. Marconi Instruments, Ltd., and Brockelsby, C. F.—Meters for measuring pH. 29th May, 1945. (619491.)

27544. Standard Telephones & Cables, Ltd., Bray, F. H., Bates, E. F., and Doughty, J. C.—Electric fire alarm system. 19th October, 1945. (619501.)

1946

3016. Woods of Colchester, Ltd., and Daly, B. B.—Choke coils for small electric motors. 30th January, 1946. (619508.)

8299. Submarine Signal Co.—Piezoelectric vibrator. 8th October, 1941. (619679.)

8300. Submarine Signal Co.—Sound transmitter and receiver. 8th October, 1941. (619511.)

11008. Philips Lamps, Ltd.—Discharge tubes adapted for generating oscillations. 27th November, 1941. (619514.)

11698. Marconi's Wireless Telegraph Co., Ltd., and Wassell, H. J. H.—Cathode-heating circuit arrangements for electron-discharge tubes. 16th April, 1946. (619517.)

13249. Rushworth, D.—Self-winding cable and like reels. 2nd May, 1946. (619519.)

13521. Standard Telephones & Cables, Ltd.—Electrical oscillation generators. 7th May, 1945. (619520.)

15365. Metropolitan-Vickers Electrical Co., Ltd., Miller, C. W., and Saxon, G.—Electric wave-guides for micro-waves. 21st May, 1946. (619521.)

15373. British Thomson-Houston Co., Ltd.—Treatment of permanent magnets. 25th May, 1945. (619684.)

16537. Philips Lamps, Ltd.—Amplitude-control circuits for electronic amplifiers. 1st June, 1945. (619523.)

17062. Electrolux, Ltd.—Insecticides and their methods of application. 7th June, 1945. (619687.)

17258. Standard Telephones & Cables, Ltd.—Testing of dry contact rectifiers. 21st July, 1945. (619524.)

17297. Hine, A., and Hitchins, H. L.—Apparatus for measuring and detecting magnetic fields. 7th June, 1946. (619525.)

19819. Marconi's Wireless Telegraph Co., Ltd., Moodey, L. T., and Robinson, P.—Coupling circuit-arrangements for radio frequency and similar circuits. 2nd July, 1946. (619689.)

22358. Standard Telephones & Cables, Ltd.—Electrical control system. 17th September, 1945. (619695.)

22802. Fielden, J. E.—Electrical estimation of moisture content and other properties of materials. 31st July, 1946. (619534.)

26393. Titanium Alloy Manufacturing Co.—Ceramic dielectric compositions. 12th November, 1942. (619538.)

29102. Etablissements Merlin & Gerin.—Alternating-current switches with arc-extinguishing arrangements. 3rd October, 1945. (619545.)

29384. Carpenter, R. E. H.—Polarized electric relays and like magnetic devices. 2nd October, 1946. (619546.)

29912. Hoop, N. V., A. de.—Remote control of a plurality of direct-current motors. 13th May, 1944. (619698.)

32106. Western Electric Co., Inc.—Wave guides. 27th March, 1945. (619554.)

32107. Western Electric Co., Inc.—Electric-discharge devices. 19th May, 1945. (619700.)

33862. Philips Lamps, Ltd.—Manufacture of caps for electric-discharge tubes or incandescent lamps. 14th May, 1943. (619559.)

33866. British Mechanical Productions, Ltd., Fuke, F. C., and Shorey, L. W.—Socket members for electrical pin-plug and socket connections. 14th November, 1946. (619560.)

34603. Scammell Lorries, Ltd., Hugh, P. G., and Hall, W. F.—Electrical operation of auxiliary apparatus mounted on or associated with motor vehicles. 22nd November, 1946. (619562.)

35618. C. A. V., Ltd., and Curzon, T.—Holders for double-ended tubular electric lamps. 2nd December, 1946. (619305.)

35638. Dundas, Ltd., R. K., and Teush, E.—Electric fans. 2nd December, 1946. (619309.)

35655. Sulzer Freres Soc. Anon.—Gas turbine plant. 29th December, 1945. (619312.)

35678. British Thomson-Houston Co., Ltd.—Electric heaters. 3rd December, 1945. (619318.)

35706. Nijland, H. A. H.—Electric circuit-breaker structures. 16th January, 1946. (619323.)

35731. Morris Motors Ltd., and Lindon, J. B.—High-frequency induction heating apparatus. 3rd December, 1946. (619327.)

35739. Billeter, J.—Adaptors for electric plug-and-socket couplings. 3rd December, 1946. (619329.)

35766. High Duty Alloys, Ltd., and Whitby, L.—Electro-brightening treatment of metals. 3rd December, 1946. (619336.)

35767. General Electric Co., Ltd., and Dunham, C. R.—Polyphase electric circuit-arrangements of the kind including inductances having saturable magnetic cores. 3rd December, 1946. (619337.)

35815. British Thomson-Houston Co., Ltd.—Electric switches having arcing contacts. 4th December, 1945. (619343.)

35956. Hunt, Ltd., A. H., and Grouse, R. A.—Manufacture of metallized paper electrical capacitors. 4th December, 1946. (619364.)

35983. Sutherland, G. C.—Automatic overload protective devices for electrical apparatus. 5th December, 1946. (619369.)

36011. Westinghouse Electric International Co.—Magnetic cores. 15th December, 1945. (619375.)

36012. Philips Lamps, Ltd.—Control devices for adjustable electrical components. 9th July, 1943. (Addition to 617098.) (619376.)

36064. British Thomson-Houston Co., Ltd.—Oven doors. 5th December, 1945. (619383.)

36084. General Electric Co., Ltd., Harris, N. L., and Ryde, J. W.—Vapour-containing electric-discharge lamps or lightning arrestors. 5th December, 1946. (619386.)

36085. General Electric Co., Ltd., and Sanger, M. J.—Electric lighting fittings. 5th December, 1946. (619387.)

36119. Lombard, A. A., and Davies, D. O.—Gas turbine power-plant installations. 6th December, 1946. (Cognate application 38172/46.) (619390.)

36159. Standard Telephones & Cables, Ltd.—Dielectric heating and electrodes therefor. 11th December, 1945. (619398.)

36199. Maschinenfabrik Oerlikon.—Arrangement for rotor windings in electrical machines, especially turbo-generators. 22nd February, 1946. (619402.)

36334. British Thomson-Houston Co., Ltd., and Keitley, R.—Embossing of thermo-plastic materials. 9th December, 1946. (619421.)

36336. British Thomson-Houston Co., Ltd.—Clothes washing-machines. 8th December, 1945. (619,422.)

36378. Telegraph Construction & Maintenance Co., Ltd., Smith, E. W., and Presswell, R. W.—Submarine cable repeaters. 9th December, 1946. (619424.)

36457. Metropolitan-Vickers Electrical Co., Ltd., Gray, W. T., and Ferguson, A. D.—Electric motor equipments and control arrangements therefor. 10th December, 1946. (619437.)

36459. British Thomson-Houston Co., Ltd.—Electric heaters. 11th December, 1945. (619438.)

36460. British Thomson-Houston Co., Ltd.—On-load tap changing systems for electric transformers. 12th December, 1945. (619439.)

36467. Telegraph Condenser Co., Ltd., Bentley, N. H., and Oliver, K. S.—Mounting and sealing means for electrolytic capacitors and other electrical apparatus. 10th December, 1946. (619441.)

36554. Freeman, J. G.—Arrangement of the electrical system in motor road vehicles. 11th December, 1946. (619451.)

36682. Tobin, J. G. P.—Electric stand lamps. 12th December, 1946. (619467.)

36701. Foster Transformers & Switchgear, Ltd., Jennings, R. E., Ellis, R. F., and Bagnall, R. I.—Electrical switching devices suitable for tapping transformers. 12th December, 1946. (619474.)

36722. Westinghouse Electric International Co.—Automatic electric circuit-breakers. 7th September, 1945. (619477.)

36728. Westinghouse Electric International Co.—High-frequency transmission and receiving systems. 25th May, 1943. (619478.)

36741. Vaughan, R. C., and Rotheroe, J. R.—Miniature electric motors. 12th December, 1946. (619481.)

36748. Ramsey, A. R. J. (Bantam-Lite, Inc.).—Pocket electric battery lamps. 12th December, 1946. (619483.)

36754. British Thomson-Houston Co., Ltd.—Load-ratio control circuits for transformers. 12th December, 1945. (619484.)

36755. British Thomson-Houston Co., Ltd.—Electric capacitors. 13th December, 1945. (619567.)

36756. British Thomson-Houston Co., Ltd.—Glass-to-metal seals. 20th April, 1945. (619568.)

36768. Resistance Welders, Ltd., and Gordon, S. H.—Electric resistance welding machines. 12th December, 1946. (619570.)

36838. Naamlooze Vennootschap Philips' Gloeilampenfabrieken.—Electromagnetic actuating devices. 19th August, 1943. (619580.)

36858. Metropolitan-Vickers Electrical Co., Ltd., Gray, W. T., and Ferguson, A. D.—Controllers for electric motors. 13th December, 1946. (619583.)

36871. British Thomson-Houston Co., Ltd.—Dynamo-electric machines. 14th December, 1945. (619587.)

36960. Guest, Keen & Nettlefolds, Ltd., and Wallbank, A. W.—Current density indicating or control meter. 16th December, 1946. (619599.)

36973. Hulls, L. R., and Mills, C. S.—Electric generators. 16th December, 1946. (619602.)

36981. Rotax, Ltd., and Lever, E. H.—Centrifugal electric switches. 16th December, 1946. (619603.)

36982. Rotax, Ltd., and Bourne, W. G.—Electric circuit-breakers. 16th December, 1946. (619604.)

37014. General Electric Co., Ltd., and Friedlander, E. S.—Electrical frequency controlling devices. 16th December, 1946. (619611.)

37015. General Electric Co., Ltd., and Friedlander, E. S.—Electrical frequency controlling devices. 16th December, 1946. (619612.)

37044. British Thomson-Houston Co., Ltd.—Centrifugal impellers. 20th December, 1945. (619617.)

37073. Marconi's Wireless Telegraph Co., Ltd.—Telegraph systems. 9th December, 1943. (619624.)

37113.—Compagnie des Freins et Signaux Westinghouse.—Manufacture of elements having an asymmetrical conductivity chiefly for selenium rectifiers. 28th February, 1946. (619630.)

37191. British Insulated Callender's Cables, Ltd., Forrester, W. F., Hinde, R. M., and Szigeti, B.—Manufacture of dielectric materials. 17th December, 1946. (619638.)

37221. Revo Electric Co., Ltd., Felton, A. E., and Price, F H.—Rotary electric switches. 18th December, 1946. (619642.)

37263. English Electric Co., Ltd., and Heyes, J. B.—Apparatus for testing ignition systems for internal-combustion engines. 18th December, 1946. (619635.)

37269. Standard Telephones & Cables, Ltd., and May, F. W.—Preparation of powder for moulding purposes. 18th December, 1946. (619646.)

37409. Standard Telephones & Cables, Ltd.—Electromagnetic interrupters. 31st May, 1944. (619660.)

37410. Standard Telephones & Cables, Ltd.—Electromagnetic relays. 8th December, 1944. (619661.)

37440. British Thomson-Houston Co., Ltd.—Electric ballasts. 22nd December, 1945. (619710.)

37491. Westinghouse Electric International Co.—Current collectors. 12th January, 1946. (619718.)

37492. Westinghouse Electric International Co.—Refrigerator doors. 22nd December, 1945. (619719.)

37499. M-O Valve Co., Ltd., and Warren, G. W.—Thermionic electric-discharge devices. 20th December, 1946. (619720.)

37500. General Electric Co., Ltd., Jenkins, H. G., and Miles, E. E.—Low-pressure electric-discharge lamps. 20th December, 1946. (619721.)

37512. English Electric Co., Ltd., and Cheshire, L. J.—Boundary layer control in fluid conduits. 20th December, 1946. (619722.)

37537. British Thomson-Houston Co., Ltd.—Waste disposal apparatus for attachment to a sink. 28th December, 1945. (619724.)

37715. M-O Valve Co., Ltd., and Windsor, L. R. E.—Electric-discharge devices. 23rd December, 1946. (619736.)

37738. Lugagne, J. A. M. M.—Electric plug-and-socket coupling devices. 15th March, 1946. (619739.)

37760. Standard Telephones & Cables, Ltd., and Seymour, R. E.—Joints for stranded electric conductors. 23rd December, 1946. (619741.)

37776. British Thomson-Houston Co., Ltd.—Electrical coils and method of making the same. 28th December, 1945. (619742.)

37777. British Thomson-Houston Co., Ltd.—Electric ovens. 28th December, 1945. (619743.)

37814. Philips Lamps, Ltd.—Superheterodyne receivers for very short waves. 26th July, 1943. (Addition to 609542.) (619747.)

37819. Allmanna Svenska Elektriska Aktiebolaget.—Method of generating an alternating-current from a direct-current or of influencing an alternating-current. 29th December, 1945. (619749.)

1947

630. Rotax, Ltd., and King, J.—Electrically operated rotary mechanisms. 8th January, 1947. (619748.)

Amended Specifications

573141. Siemens Electric Lamps and Supplies, Ltd., and others.—Electric discharge lamps.

578094 General Electric Co., Ltd., and another.—Radio blind-landing devices for aircraft.

578588. Westinghouse Electric International Co.—Electron discharge devices.

579233. Hughes & Son, Ltd., H., and another—Apparatus for the generation and/or amplification of ultra-high-frequency oscillations.

588140. Western Electric Co., Inc.—Electrical oscillator systems.

590465. Raytheon Manufacturing Co.—Electron discharge devices.

605549. Revo Electric Co., Ltd., and another.—Electric tumbler switches.

Trade Marks

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of 23rd March:—

TWINNER.—No. B664,521. Electric welding apparatus, welding jigs and electric soldering irons, and parts of all such goods included in Class 9.—Donald Ross & Partners, Ltd., 88, Regent Street, London, W.1.

PLASTAPACK.—No. 670,676. Class 9. Electric capacitors.—The Telegraph Condenser Co., Ltd., Wales Farm Road, North Acton, London, W.3.

AQUASTRON.—No. 670,447. Class 11. Electrically operated installations for softening and purifying water.—Superstat, Ltd., Portsoken House, 155, Minories, London, E.C.3.

CONTRACT INFORMATION

ACCEPTED TENDERS AND PROSPECTIVE ELECTRICAL WORK

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Birkenhead.—12th April. Borough Council. Overhaul and renewal where necessary of the electrical installation at Eastham House. Manager, Eastham House, Eastham Village.

Bury.—18th April. Corporation. Internal fire alarm system and intercommunicating telephone systems at the new Town Hall. (25th March.)

Chingford.—11th April. Borough Council. Electrically operated baling press suitable for dealing with salvaged paper. F. J. O'Dowd, town clerk, Town Hall.

Denbighshire.—Education Authority. Contractors wishing to tender for heating and hot water installations and electric lighting installations at the new primary school at Towyn and a three-classroom hutment at Llanrwst Grammar School should submit their names by 18th April. (25th March.)

Edinburgh.—North of Scotland Hydro-Electric Board. Transformers for rural distribution. (25th March.)

Southampton. — 15th April. Corporation. Electrical installations in 94 houses. (25th March.)

Southern Rhodesia.—SALISBURY.—12th April. City Council. Transformers and bushings. (C.R.E. (I.B.) 8489/49. Ten/314.)* Switch and fuse gear. (C.R.E. (I.B.) 8673/49. Ten/313.)*

* Specifications may be inspected at the Commercial Relations and Exports Department, Thames House North, Millbank, S.W.1.

Orders Placed

Gillingham (Kent).—Electrical installations in a further 100 houses (£3,800).—Lauray Electrical Co.

Hyde.—Corporation. Electrical installations in 84 houses on the Harnour Farm estate.—F. Marsland, Stockport.

Peterborough.—Corporation. Electrical installations in 184 houses on the Dogsthorpe/Newark estate.—R. J. Kemp & Co., Coalville.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Abergavenny.—Houses (38), Llwynu Farm estate; borough surveyor.

Acton.—Housing schemes, Southfield Road and St. Albans Avenue, for T.C.; C. E. Culpin, architect, 3, Southampton Place, W.C.1.

Altrincham.—Houses (50), Grange estate; Kenyon Construction Co., Ltd., builders, Alt Road, Ashton-under-Lyne.

Ayr.—School, Braehead (£47,000); county architect, Ayr.

Bircotes.—Factory for J. H. Lewis & Sons, Ltd., hosiery manufacturers, Haydn Road, Sherwood; W. J. Simms, Sons & Cooke, Ltd., builders, Haydn Road, Sherwood, Nottingham.

Birmingham.—Primary school, Shard End; Jackson & Edmonds, architects, 61, New Street.

Branch library (£30,000), Glebe Farm Road, and police headquarters, Selly Oak and King's Heath (£29,990); city engineer.

Blackpool.—Offices, Sutherland Road West; R. Fielding & Son, builders, Stanhope Road Works.

Extensions to works; Bee Bee Biscuits, Ltd., Devonshire Road and Mansfield Road.

Bridgwater.—Houses (44 Cornish unit type), Sydenham estate; borough engineer.

Bristol.—Extensions to works to double output; Gardiner, Sons & Co., Ltd., Kingsland Road.

Three blocks of flats (36 dwellings), Northumberland estate; city architect.

Brighton.—Flats (108), Vardon Road and London Road, and Old Shoreham Road; T. J. & K. Rowley, 97, Gloucester Place, W.1.

Houses and flats (124), Lower Bevendean estate; borough engineer.

Factory, Hollingbury estate; Leytonstone Jig & Tool Co., Ltd., 606, High Road, E.10.

Carlton.—Houses (104) and bungalows (18), Southcliffe Valley Road sites, for U.D.C.; J. R. Campbell, surveyor, Council House, Burton Road.

Chatham.—Temporary church, Tobruk Way; MacIvor & Baldwin, architects, 70, High Street, Rochester.

Chelmsford.—Extensions and alterations to police headquarters (£43,300); borough surveyor.

Cheshire.—County secondary modern school, Pensby; E. M. Parkes, county architect, The Castle, Chester.

Chorlton-cum-Hardy. — Rebuilding cinema, Barlow Moor Road, for Mrs. Norton Colville; B. Waterhouse, architect, 134, Deansgate, Manchester, 3.

Cirencester.—Experimental health centre (£60,000); E. C. Boyce, county surveyor, Quay Street, Gloucester.

Compton (Berks).—Research station for the Agricultural Research Council; Lavender McMillan, Ltd., builders, 54, Cheam Common Road, Worcester Park, Surrey.

Dartford.—Offices, warehouse, etc., Kent Road; G. J. Lofts, Ltd., Royal Oak Yard, Spital Street.

Daventry.—County College for Northamptonshire C.C.; A. N. Harris, county architect, Northampton.

Davyhulme.—Houses (24), Furness Road; A. Locke (1940), Ltd., builders, 166, Lostock Road, Davyhulme, Manchester.

Durham.—Semi-detached houses (52) and six shops with flats above; J. Green, city engineer, Town Hall.

Grammar school and technical school, Peterlee; G. R. Clayton, county architect, Court Lane.

East Barnet.—Infants' school, Church Hill Road (£46,000); county architect, Hertford.

Eastbourne.—Rebuilding Mostyn Hotel (£80,000); H. Hubbard Ford, architect, 24a, Cornfield Road.

Edinburgh.—Poultry research station, West Mains Road (£83,000), for Agricultural Research Council; A. G. Ingram, chief engineer, Department of Agriculture for Scotland, Edinburgh.

Enfield.—Flats (42) and houses, Park Road, for U.D.C.; Frank Lee, surveyor, 7, Little Park Gardens.

Eston.—Houses (42), Jubilee Road, for U.D.C.; B. R. W. Gofton, clerk, Council Offices, Grangetown-on-Tees.

Ford.—Houses at R.N. Air Station for Admiralty; W. J. White & Sons, Ltd., 1, Bayford Road, Littlehampton, builders.

Gateshead.—Flats and shops, Coach Road and Blue Quarries estates (£24,000); J. J. Hedley, builder, Oxford Street, Newcastle-on-Tyne.

Extensions to factory for Reed, Millican & Co., glass merchants; C. S. Errington, 46, Granger Street, Newcastle.

Glasgow.—Permanent headquarters, Milnbank Street; Glasgow T.A. and A.F. Association, Sauchiehall Street.

Transformer house and staff accommodation, Possil Road; C. J. McNair, Elder & Ripley, architects, 529, Sauchiehall Street.

Hereford.—Flats (30), Hunderton site; city surveyor.

Hove.—Flats (72), Sunninghill Avenue and Hangleton Road; borough engineer.

Hull.—Factory, industrial estate, for H. Percival (Fish Merchants), Ltd.; S. Spruitt, Ltd., builders, 609, Holderness Road.

Ipswich.—Houses (420), Castle Hill estate; borough engineer.

Kelsterton (Flint).—Technical college (£300,000); county architect, Mold.

Kingston-on-Thames.—Flats, Kingston Hill; Sydney Clough, Son & Partner, architects, 115, Park Street, W.1.

Lancashire.—County secondary modern schools, Skelmersdale; G. Noel Hill, county architect, Preston.

Leamington Spa.—Houses (26), Linnington Close; Lloyd F. Ward, architect, 34, Ludgate Hill, Birmingham, 3.

Leamside (Co. Durham).—Houses (64) for R.D.C.; J. F. Willis, housing architect, R.D.C. Offices, Byland Lodge, Durham.

Liverpool.—Secondary school, Speke; Lloyd & Cross, Ltd., builders, 68, Argyle Street, Birkenhead.

Houses (60), Long Lane, Hunslet Road; city architect.

London.—FULHAM.—Dwellings (60), Edith Villas site, for L.C.C.; N. F. Cachemaille-Day, architect, Tewin, Herts.

STOKE NEWINGTON.—Additions to waterworks (£139,500) for M.W.B.; Binnie, Deacon & Gourley, consulting engineers, Artillery House, S.W.1.

WESTMINSTER.—Workshops and stores (£17,000) Pimlico estate, for City Council; Powell & Moya, architects, 36, Gt. Smith Street, S.W.1.

Loughborough.—Science laboratories and teachers' training block at College, for Leicestershire E.C.; county architect, Grey Friars, Leicester.

Mansfield.—Garage, Nursery Lane; Trent Motor Traction Co., Ltd., Uttoxeter New Road, Derby.

Middleton.—County secondary modern school, Moor Close; E. D. Lyons & Israel, architects, 72, New Cavendish Street, London, W.1.

Neath.—Office buildings for Ministry of National Insurance; Gee, Walker & Slater, Ltd., builders, Coychurch Road, Bridgend, Glamorgan.

Newbury.—Houses (60); borough engineer.

Newcastle-on-Tyne.—Extensions to Nurses' Home, Royal Victoria Infirmary; W. Curtis Green, Son & Lloyd, architects, 5, Pickering Place, London, S.W.1.

Northfleet.—Offices, 27/32, Galley Hill; Kent Kraft Mills, Ltd.

Oldham.—Primary school, Limehurst estate; F. Thorpe & Whyman, architects, Barclays Bank Buildings, Church Lane.

Orrell.—Pithead baths, Bickershaw Collieries, for National Miners' Welfare Council; A. McColl & Sons, builders, Virgil Street, St. Helens, Lancs.

Oxhey (Herts).—Infants' and junior schools for E.C.; Gollins, Melvin & Partners, architects, 31, Russell Square, London, W.C.1.

Plymouth.—Factory, Cattewater Road, Prince Rock; Slumberland, Ltd., 20, St. Ann's Crescent, Wandsworth, S.W.18.

Poole.—Foundry, pattern shop, canteen, etc., Mammings Heath Road; Hamworthy Engineering Co., Harbour Road.

Radcliffe.—Houses (32), Ainsworth site; Greenwoods Building Industries, Ltd., Salem Works, Oldham.

Shenley.—Extensions to Middlesex Colony (£20,000); North-West Metropolitan Regional Hospital Board, 11a, Portland Place, London, W.1.

Solihull.—Permanent houses (260), Redlands Road, Slater Road and Cranmore estate, for U.D.C.; C. R. Hutchinson, surveyor, 90, Station Road, Holihull, near Birmingham.

Stockport.—Houses (18), Dial Park Road (£20,659); T. Fryer & Co., Ltd., builders, Garden Street, Great Moor.

Crematorium; W. F. Gardner, borough surveyor, Town Hall.

Stowmarket.—Flats (60), Recreation Road, for U.D.C.; housing surveyor, Council Offices, Ipswich Road.

Wakefield.—Shops and flats, Flanshaw estate, and civic restaurant, Almshouse Lane; E. H. Stazicker, city engineer, Town Hall.

Houses (22), Homesteads estate; J. S. Bramley & Sons, Ltd., builders, Newton Bar.

Extensions to power house; Bradley & Craven, Ltd., Westgate Common Foundry.

Walthamstow.—Additional classrooms, South-West Essex Technical College, Forest Road; H. Conolly, county architect, County Hall, Chelmsford.

Warrington.—Summer school, Prestatyn, for Education Committee; J. Y. Hughes, borough surveyor, Bank Park.

Westmorland.—Secondary school, Kirkby Stephen; R. H. Crompton, county architect, Kendal.

Whyteleafe.—Flats (32), Godstone Road; E. O'Sullivan (Kenley), Ltd., Cray Avenue, Orpington.

Wolverhampton.—Houses (66), Willenhall Road; borough engineer.

York.—Houses (222), Askham Lane, and first instalment of College of Further Education (£140,900); city engineer and architect.